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SURGERY IN ABNORMAL CONDITIONS OF THE PLEURA.

The first of these which demands consideration is that of empyema.

Acute Empyema.

The treatment of this condition has until recently been far from satisfactory, yet it is strange to find that the modern principles were clearly stated by Hippocrates. His teaching as abstracted by Stephen Paget [1] was as follows:—

"Having carefully washed your patient with warm water, you must seat him on a firm chair, and then, while your assistant steadies his hands, you must gently shake him by the shoulders, in the hope of obtaining a splashing sound in the affected side of the chest. Operation should not be performed before the fifteenth day after the beginning of his illness. An incision must be made through the skin, where the pain and swelling are most evident, and then the pleura must be opened, either by trephining the rib, or with a sharp instrument, or with the actual cautery. When a sufficient quantity of pus has been let out (and those who suffer from empyema or dropsy of the chest are sure to die if you *rapidly* evacuate the pus or the water), you must keep the wound open with a strip of linen cloth, secured with a thread. This strip must be removed daily, that the remainder of the pus may run out. On the tenth day after the operation you must irrigate the cavity with warm wine and oil, for the purpose of cleansing the surface of the lung; these irrigations must be made twice a day. Finally, when the discharge has become thin and serous, you must keep a small rod of metal in the wound, using a smaller size from time, to time till the whole wound has healed."

It is worthy of note that Hippocrates advises cleanliness with no drainage till the fifteenth day, that he used irrigation, and that he recognised the necessity of keeping the wound open till the infection had subsided.

From the time of Hippocrates until recently the treatment of empyema forms a lamentable chapter in the history of medicine and surgery. The Hippocratic rules were followed till the fifth or sixth century, and afterwards were discarded or forgotten, although the cautery and even caustics were sometimes used by the Arabians. Ambroise Paré came nearer to the methods of Hippocrates, for he employed intercostal incision and even resected ribs. In spite of this, repeated aspiration replaced this operation. One surgeon made 74 punctures in nine months in a child of 11 years, obtaining in all 30 pints of pus, and in 1872 a case was published by Bouchut in which the chest was punctured 122 times in 11 months. Till Lister's discoveries there were comparatively few successes from incision, and Dupuytren, when he himself suffered from empyema, refused operation, which is not surprising when his own record was only four recoveries out of 50 cases. Velpeau had no recoveries out of 12 cases, and Sir Astley Cooper said that he could never get a single cure.

One of the most notable landmarks in the history of the treatment of this condition is the report of the Empyema Commission [2] carried out in America at the instance of the United States Army authorities. It was initiated because of the heavy mortality observed in the military camps of that country in the winter of 1917–18, following an epidemic of hæmolytic streptococcus infections of the respiratory tract. The average mortality of the empyema cases before the Commission started its work was 30·2 per cent., and in some camps it was as high as 84 per cent. As a result of the work of the Commission, in the cases treated by them it fell to 4·3 per cent., and they came to the conclusion that death should not occur in cases of empyema, other than tuberculous empyema, unless it were complicated by such conditions as lung abscess and suppurative pericarditis. The occasional occurrence of cerebral abscess can also neither be foreseen nor prevented.

Graham,[3] who was a member of the Commission, and whose admirable and philosophic Gross Prize Essay should be widely studied, points out that there is a marked difference between empyema due to the streptococcus and that due to the pneumococcus, both in pathological development and course. He further suggests that the high mortality in the streptococcal cases is the result of applying to their treatment the principles commonly and correctly applied to pneumococcal cases. There are two fundamental differences between them. In pneumococcal cases the effusion does not generally develop into pus until after the pneumonia has subsided, such cases being called meta-pneumonic. In streptococcal cases the effusion often develops early and is copious and rapidly formed, being thus syn-pneumonic and adding to the dyspnœa and cyanosis. The other difference between the two types is that in pneumococcal cases the infected part of the pleura is soon walled off from the general pleural space by adhesions, while in the streptococcal cases the condition is at first one of fluid free in the pleural space, and generally of thin, sero-purulent character, yet loaded with streptococci. At this stage the condition would be more accurately described as a "pyothorax," as urged by Tudor Edwards.[4] Any attempt to drain the pleura must produce a more or less complete open pyopneumothorax with all its dangers, which are greatly increased, as Graham points out, by the diminished vital capacity, due to the associated lung condition—viz., broncho-pneumonia or collapse, and to the free unfixed mediastinum. On the other hand, if aspiration only is carried out in streptococcal cases at first, relief is given to urgent symptoms, and time is allowed for adhesions to form and thus to localise the fluid into a true empyema. The question naturally arises as to how this event can be recognised. Radiographic investigation may help and should be carried out where possible, but in general a useful and safe criterion is the appearance on aspiration of frank pus instead of the thin sero-purulent fluid. The difference is somewhat reminiscent of the old distinction between "thin, sanious" and "laudable" pus. It is significant in this connexion that Cameron and Osman [5] found that syn-pneumonic empyema in infants was a very fatal condition if early open operation were carried out, and that the meta-pneumonic cases usually recovered.

The Empyema Commission found that, as a rule, the interval between the onset of the streptococcal pneumonia and the development of frank pus was from two to three weeks. On an average four aspirations were carried out during that time. The most important outcome of the Commission's report is that empyema is *not* to be regarded as an acute surgical emergency requiring operation as soon as

* Lectures I. and II. appeared in THE LANCET of March 23rd and April 6th respectively.

it is recognised. Such a course is dangerous. If there are acute symptoms these can usually be relieved by aspiration, repeated until it is clear that the time for operation has arrived as judged by the examination of the pus and by the general condition of the patient.

It should be more widely recognised and taught that empyema is a serious condition, requiring very careful treatment. It should no longer be regarded and treated like an abscess, which must be opened as soon as recognised, since it requires the most careful investigation of its cause, its situation, and its size. When drainage is decided upon, the manner in which this should be done depends to some extent upon these considerations. Empyema recognised early and treated efficiently usually clears up remarkably quickly. Too early evacuation is dangerous and leads to increased mortality. On the other hand, delay when frank pus is obtained, and inefficient drainage, may lead to chronic empyema, and that, as Morriston Davies [6] happily expresses it, "is more easily prevented than cured."

Though the adhesions are somewhat slow to form in streptococcal cases, they organise very quickly and tend to bind down the lung and prevent re-expansion. Early operation is permissible, and indeed desirable, in pneumococcal cases, since they are walled off at a very early stage, and if too long delay occur there will be thick flaky masses in the exudate and on both the parietal and visceral pleura. There is another variety of empyema in which early operation is advisable, and that is where the exudate is fœtid, but here, again, only if frank pus is obtained on diagnostic puncture. Such cases may be due to the entrance of anaerobic organisms from rupture of small lung abscesses, or to other organisms leading to fœtor in the pus, such as *Bacillus coli*.

The methods of treating empyema are numerous, and there is no general agreement as to the best. The objects in view are obviously (1) to evacuate the exudate, whether sero-purulent or frank pus; (2) to sterilise the infected area of the pleura; (3) to promote the expansion of the lung as quickly and as completely as possible; (4) to maintain and improve the general condition of the patient, an object strongly urged by the Empyema Commission.

The methods used by different surgeons for acute empyema are almost bewildering in their variety. They comprise (1) aspiration, which may be repeated or continuous; (2) drainage by closed methods, (*a*) by thoracotomy through an interspace, or (*b*) by thoracotomy with rib resection; (3) drainage by open methods.

Aspiration.—An exploratory puncture is almost invariably carried out to establish the diagnosis and, if time permit, to determine the infective organism before operation. It is usual at the same time, if the symptoms and physical signs suggest a large effusion, to remove by paracentesis enough of it to relieve the symptoms. Some physicians and surgeons carry this out by gas replacement. Aspiration should be repeated until frank pus is obtained. It happens in a small proportion of cases that repeated aspiration suffices to effect a cure, the fluid obtained becoming smaller in amount and eventually thin and sterile. Much more often the pus increases, and more effective drainage becomes imperative. Repeated aspirations, especially when carried out successively at or near the same spot, often become very painful and very distressing to a nervous or debilitated patient. This can often be obviated by a simple procedure advised by Tudor Edwards. At the initial aspiration he makes an incision under local anæsthesia, down to the ribs and intercostal structures, and after aspiration packs the incision with gauze. Subsequent aspirations are usually quite painless, and the procedure has the further advantage that the granulation tissue which develops in the wound forms, as a rule, an effective barrier to infection of the subcutaneous cellular tissues. Diagnostic puncture and therapeutic aspiration may either of them lead to this painful and worrying complication, and in some cases it is wise before withdrawing the needle to fill it with antiseptic solution to avoid infection of the track. In this connexion I should like to urge using complete local anæsthesia down to the pleura for any puncture, even the simplest diagnostic one, not only to prevent pain but to lessen the risk of pleural shock, which though rare, is not negligible.

Continuous aspiration has often been recommended. Poynton and Reynolds [7] introduced a method for carrying this out in infancy and childhood, and described an apparatus for this purpose. This method was employed in adults as far back as 1891 by Bulau.[8] He punctured the thorax with a trocar and cannula, inserted a soft rubber catheter through the latter, syphoning out the fluid, and establishing negative pressure drainage. The method was adversely criticised and fell into disuse. It has been revived in America by Mozingo,[9] who also irrigates with Dakin's solution. He published his results in 138 cases, of which 45 were acute and 93 chronic, with a mortality of only 2 per cent. He claims that this method can be used even in the early sero-purulent stage, since drainage is secured without the risk of open pneumothorax. He stresses the fact that it is of value in cases of bilateral empyema.

This method has recently been strenuously championed in this country by Mr. Harold Burrows,[10] and he calls the method "airtight suction drainage of the chest." He allows that its one "ineradicable drawback" is the risk of cellulitis of the chest wall, and he has found, as the American Empyema Commission did, that a delirious patient may pull out the tube, when open pneumothorax may be difficult to prevent if the case is an early one. A further disadvantage, in my opinion, is that irrigation with Dakin's fluid by this means is less easily carried out than after incision and drainage, and involves a risk of increasing the intrapleural pressure temporarily. We may admit that this method is capable of giving good results, but it has not established itself as one for general use.

When it is decided to evacuate the empyema by thoracotomy, there is still a choice of various procedures. It may be carried out by simple incision through an intercostal space, or by incision with subperiosteal removal of a section of rib. In either case it should be effected under local anæsthesia if possible, though a general anæsthetic, such as gas and oxygen, may be employed. In very debilitated patients, or in those gravely ill, simple incision is usually all that is done, but where possible many surgeons prefer to remove a piece of rib. That an empyema can be successfully drained by a tube introduced through a simple intercostal incision is certain, but if the empyema is slow to clear up, bone may form round the tube from periosteal irritation and actually prevent the eventual closure of the sinus after the tube is withdrawn. Removal of a small piece from one rib ensures better drainage and it seems rarely to lead to any bone infection. Some surgeons, especially in America, apply bone-wax over the cut ends of the rib to avoid this, but that is not often done in this country.

After the pleura has been opened there are still various opinions as to the best method to adopt. By some surgeons a suction apparatus is employed and the pleura is dried as far as possible. Others wash out the empyema, while yet others insert a finger and remove flakes and adherent pleural exudate as far as possible. In pneumococcal cases especially attempts have been made after as complete clearance of the cavity as possible to close the wound completely without drainage. If fluid collects again it is removed by repeated aspiration. This method, in my opinion, has little to recommend it, since the discomfort of repeated tappings and the eventual reopening of the wound for drainage, which proves necessary in a proportion of the cases, are often more distressing to the patient than actual primary drainage.

The more routine method has been the ordinary one of insertion of a drainage-tube and open drainage, with or without irrigation. This, if done at the right

time and in the right situation, gives good results in most cases. In general, however, it is less satisfactory than the more modern method of drainage by closed methods, with some special arrangement for securing negative pressure within the empyema cavity and, if desired, with means to permit of irrigation. There are many ingenious forms of apparatus to this end, but it may be said that the simpler they are the more likely they are to be effective and satisfactory. The flanged drainage-tube with a smaller secondary tube incorporated in its wall, suggested and used by Mr. Tudor Edwards, serves its purpose admirably. The wound is closed except for the opening through which the conjoined tube emerges. The large section is connected to a longer tube, the end of which lies under water in a receptacle beside the bed. The smaller satellite tube is kept closed by a clamp or a spigot except when it is used for purposes of irrigating the cavity. The iexpulsive efforts of cough soon force air out of the empyema cavity through the large tube and the water ascends in it, so that a negative pressure of as much as 20 mm. of mercury is generally obtained. By this method, when combined with irrigation, the period of treatment is, in my experience, shorter than that with open drainage. The lung rapidly expands, and eventually the pleural surfaces adhere except just round the flange of the tube. By this time the discharge has usually ceased, and the tube can be withdrawn, when healing rapidly occurs.

There are two subsidiary aids to the treatment of empyema after thoracotomy. The first of these is almost universally approved and is generally employed. This consists in efforts to promote expansion of the collapsed areas of the affected lung in order that it may fill up the pleural space caused by the empyema. Such respiratory gymnastics as coughing, blowing water from one Woulfe's bottle to another, distending bladders, or blowing bubbles, are all useful.

The second and less generally accepted procedure is that of irrigation of the empyema cavity. This, as we have seen, dates from the time of Hippocrates. The prejudice against its use, which has not entirely died out, originated in the seventies of the last century, when a number of cases of poisoning from the antiseptics then used were reported, while instances of convulsions and even of fatal syncope from irrigation were observed and put on record. It was soon recognised in the cases in which convulsions and pleural shock occurred that the irrigation was used in too large quantities or injected roughly. At the present time the solutions are carefully introduced and never in such a manner as to be under pressure, since an outlet tube wider than the irrigating tube is invariably employed, and consequently these accidents do not occur. Various substances have been employed for irrigation, notably Dakin's fluid and other chlorine preparations, such as chloramine, also acriflavine, proflavine, crystal violet, methylene-blue, and gentian violet. Of these, that most generally used is Dakin's fluid—viz., neutral 0·5 per cent. solution of sodium hypochlorite. It was employed and recommended by the American Empyema Commission. They claimed that it was nearly ideal for the purpose of irrigation, since they found that it not only helped to sterilise the cavity, but that it also served to remove the exudate on the pleura—in other words, to effect decortication. Methyl violet is almost too effective in the latter sense, and may cause actual injury to the pleura itself. If Dakin's fluid is systematically used—e.g., 20–30 c.cm. every two hours—pocketing is unusual and chronic empyema should become rare. In cases with broncho-pleural fistula irrigation with Dakin's fluid is, as a rule, impracticable, since the irritant chlorine vapour reaches the bronchial mucous membrane, causing distressing cough and discomfort.

There are certain less common varieties of empyema which require brief consideration. They are bilateral empyema, interlobar, apical, mesial or mediastinal, and localised diaphragmatic forms.

Bilateral empyema is naturally a grave condition, though with care and judgment in treatment a fair proportion recover. Repeated aspiration should be carried out on both sides when necessary until frank pus is obtained, when the larger one may be opened and drained, preferably by a closed method. Aspiration of the second side should be carried out again when necessary, until it is clear that the side operated upon is progressing satisfactorily and until the mediastinum is probably fixed. The second side can then also be drained. This may only involve an interval of a few days between the two operations.

Interlobar empyema may give rise to special difficulty, both in diagnosis and treatment. It may be impossible to distinguish it from pulmonary abscess. If the physical signs and the X ray appearances demonstrate that the collection of pus has extended from the interlobar fissure to the surface, and therefore invaded a localised area of the general pleural space, it can be treated as an ordinary empyema and drained. If it remain localised in the interlobar space its treatment is practically that of a pulmonary abscess, and not that of empyema—that is to say, by a two-stage operation, since adhesions must be obtained over it, unless they are already present, by gauze pack before it is incised and drained.

The other varieties—apical, mediastinal, and diaphragmatic—also offer special difficulties in regard to diagnosis. When they are recognised the mode of access is a matter of surgical expediency, and the surgeon must naturally devise his operation to secure the most effective drainage.

Chronic Empyema.

The problems offered by chronic empyema are among the most difficult in regard to the surgery of the lung and pleura. At the outset it is well to consider the causes of chronic empyema. These are: (1) Too early opening in streptococcal cases. If the patients survive, which is unusual, adhesions form as the lung slowly expands, and troublesome pocketing is the result. (2) Delayed opening. In this case the dense thickening of the exudate over the visceral pleura prevents the lung from expanding. (3) Insufficient or ineffective drainage from incision at a wrong spot. (4) From foreign bodies gaining entrance, such as swabs and pieces of drainage-tube, or small sequestra from the cut ribs. (5) Formation of a bony ring round the drainage-tube. (6) Pocketing. (7) Broncho-pleural fistula.

In the treatment of chronic empyema the first essential is thorough X ray examination, with or without lipiodol, to discover the character, size, and direction of the space or sinus and the presence of pocketing, or even the existence of a second undrained empyema. It sometimes happens that making another opening in a more suitable place, combined with prolonged careful irrigation with Dakin's fluid, will serve to secure complete closure, even after the lapse of many months. Too often, however, it becomes clear that the space is too large to permit of the lung expanding, or of the chest wall falling in, to allow the visceral and parietal layers of the pleura to come together.

The earlier surgical attempts were in the direction of mobilising the ribs over the cavity to allow the chest wall to fall in to meet the collapsed lung. Estlander,[11] in 1879, introduced the thoracoplastic procedure which has since borne his name, though it is generally allowed that some such procedure had been carried out by a few surgeons at or before that time at various places. It consisted in excising parts of several ribs over the empyema cavity, thus allowing the chest wall to fall in. Though successful in regard to relatively small chronic empyema cavities, it did not afford sufficient mobilisation of the ribs in larger ones. This was recognised by Schede, who introduced his operation whereby large amounts of as many ribs and intercostal structures as were necessary were removed, and also all the affected parietal pleura. This is a severe and mutilating operation, with a considerable mortality, and even when successful

it seriously diminishes the vital capacity, as has been shown by Graham.

It was shown by Delorme,[12] in 1893, by some experiments on animals, that even after long compression and collapse by thick organised exudate on the visceral pleura, the lung could expand if this constricting exudate were removed. Quite independently, G. R. Fowler,[13] in October of the same year, carried out an operation devised to liberate the lung. The operation is therefore called the Fowler-Delorme operation of decortication. In many instances this proves to be easier than might be expected. If the plane between the pleura and the adherent membrane can be reached, it is often possible to strip off the latter, when the lung readily expands, especially if the operation is carried out under intratracheal anæsthesia. It is not necessary to remove the membrane from the parietal pleura except at its reflexion on to the visceral layer.

If removal prove to be impracticable, the ingenious manœuvre of discission, suggested by Ransohoff [14] may serve to allow the compressed lung to expand. He criss-crosses or gridirons the thickened adherent exudate down to the level of the pleura by incisions at right angles to one another at a distance of one-quarter of an inch. On gently increasing the intrapulmonary pressure, the incisions widen and considerable expansion of the lung may result, but rarely of sufficient degree to enable the empyema cavity to close.

An operation has been devised and carried out by Colonel W. L. Keller [15] which attempts to achieve both objects of falling in of the chest wall and decortication. He makes a large incision, carries out extensive rib resections, removes the parietal pleura in so far as may be necessary, and carries out a chemical decortication by means of gentian violet, after which the cavity is regularly irrigated with Dakin's solution.

All these procedures involve serious operative manipulation in patients already debilitated by long discharges and with diminished vital capacity, and are not to be undertaken lightly.

A high mortality in empyema cases and a high percentage of chronic empyemata in any series should lead those concerned both from the medical and surgical sides to consider whether there may not be some defect in diagnosis or in treatment.

Tuberculous Empyema.

Pus developing in the pleural cavity in association with pulmonary and pleural tuberculosis is a most troublesome condition, and may be a most serious complication. The term "tuberculous empyema" is unfortunately somewhat loosely applied to several conditions, different in origin, nature, and severity, viz.: (1) A serous, tuberculous effusion which becomes chronic may in course of time become more cellular, especially after tapping, and eventually purulent. This is a tuberculous pyothorax, and if localised could strictly be called a tuberculous empyema. (2) It is well known that in artificial pneumothorax treatment effusion develops in about 50 per cent. of the cases, and that in a fair proportion of these it eventually becomes purulent. This condition is really one of tuberculous pyopneumothorax. A similar condition may develop in cases of spontaneous pneumothorax caused by tuberculous lesions. In such cases the pus may cause little inconvenience, and may only require repeated aspiration or replacement. (3) Cases of pyopneumothorax due to lung rupture or lung puncture, in which secondary infection occurs. This is a most grave condition and may arise in at least four different ways—viz., (1) from lung puncture, either at the initial induction of a therapeutic pneumothorax or, very rarely, from a diagnostic puncture; (2) from rupture of adhesions involving the lung, especially if positive pressures have been used; (3) spontaneous rupture of a subpleural focus of caseation or of a cavity; (4) rupture of a pyopneumothorax through the visceral pleura into a bronchus. In all of these conditions, but especially in the last two, there is the added risk of secondary septic infection of the pleura. The outlook for these patients, apart from active treatment, is extremely grave. On the other hand, Hutchison and Blair [16] suggest that lung rupture in the course of pneumothorax treatment may be commoner than is generally supposed. They observed this complication seven times in the treatment of 120 cases. They describe a typical temperature chart with a sudden rise and a gradual staircase fall in which the previous daily variation of temperature is roughly preserved, with physical signs indicating sudden displacement of the mediastinum and with a change in the intrapleural pressures. By contrast with instances of this type, cases of rupture with secondary septic infection of the pleura may be fulminatingly acute and associated with great shock. It is obvious, therefore, that cases of tuberculous disease in which purulent effusions occur into the pleura, require careful investigation to establish their nature.

My colleague, Dr. L. S. T. Burrell, has been kind enough to give me some very striking statistics of his cases and details of the methods of treatment which he has found most helpful. He found that of his first 309 cases of artificial pneumothorax treatment for pulmonary tuberculosis 181 had no definite effusion—i.e., at most a small amount. Of these 181, 57 were dead in 1926 (31·5 per cent.). Effusion of definite amount occurred in 128, of which 47 (36·7 per cent.) were dead in 1926. In these 128 cases the fluid was clear in 92, of whom 27 (29·4 per cent.) were dead in 1926. In the remaining 36 cases the fluid was pus. Of these patients 20 had died by 1926 (55·6 per cent.). This notably high mortality in cases in which purulent effusion occurs, as compared with those in which the effusion is serous, decided Dr. Burrell [17] to aspirate all cases in which pus occurs, and to try to get the lung to expand. He writes:—

> "If the pus is too thick to aspirate, I introduce 20 c.cm. of Gauvain's modifying fluid (guaiacol g. 2, creosote g. 2, iodoform g. 5, ether g. 10, sterile olive oil 100 c.cm.) and leave this in for 24 hours, by which time the fluid can generally be aspirated easily. I then wash out the pleural cavity with 1 in 5000 methylene-blue solution until it is completely clear, and introduce enough oxygen to allow easy aspiration, but not enough to raise the pressure beyond −6 cm. of water. I watch carefully with the X ray, and if the lung begins to re-expand I encourage this by further aspirations and wash-outs, but if there is no re-expansion I advise thoracoplasty. I carry out the same procedure for spontaneous pneumothorax when once pus forms."

Dr. Burrell's experience of dealing with these cases by this method is encouraging. There is one point which cannot be too strongly emphasised, and that is that purulent effusions in tuberculous disease should never be treated by open drainage, since this can only lead to pneumothorax with permanent external opening. Where this has unfortunately been done, the only hope is in washing out the cavity and eventually carrying out a thoracoplasty in stages if the patient's condition will permit.

Oleothorax.

There is, however, another method of treating these cases of tuberculous effusion which is worthy of note, and that is by introducing oil into the pleural cavity. This was first employed by Weill in 1918 for cases of pyothorax. He used only small quantities of oil, to which oil of gomenol had been added. Archibald and de Carle Woodcock had also tried experiments with liquid paraffin. Bernou, in 1922,[18] used much larger quantities, and the name of "oleothorax" is now applied to this form of treatment. Sterile olive oil or liquid paraffin is used, and oil of gomenol is added in strengths of 5 to 20 per cent. From 400–600 c.cm. are injected, air, fluid, or pus being withdrawn at the same time as the oil is introduced. Burnard [19] introduces as much as 1000 c.cm. These large quantities should only be injected where the pleura has been infected, or where it has been distended with fluid or gas. An interesting study of this subject has been published

in this country by Chandler and Roodhouse Gloyne.[20] They give details of the method and a summary of the conditions in which it may be useful. These include cases of chronic effusion and of tuberculous pyothorax, and especially cases where rupture of the lung has occurred. Oleothorax is believed to have an antiseptic action if gomenol is employed, and it may help to secure healing of the rupture. If it fails, then thoracoplasty should be considered.

I may here add, in parentheses, that oleothorax has been recommended for other purposes, viz.: (1) To obviate frequent refills in artificial pneumothorax treatment, where they are not easy to obtain or are undesirable. (2) To limit or prevent adhesions. In this case, if the condition is one of "virgin" pleura—i.e., where air, fluid, or pus are not present—only small quantities should be introduced at first. (3) To delay the progress of obliterative pneumothorax, which often prevents the continuance of artificial pneumothorax threatment.

Dr. R. C. Wingfield has used it at Frimley in three cases with encouraging results. It is to be noted that there is often a definite febrile reaction after the injections of oil.

The method of oleothorax is still on trial, but it promises to be of use in selected cases. At present, however, its field of usefulness is restricted.

Hæmothorax and Wounds of the Pleura and Lungs.

Hæmothorax is most frequently the result of injury or wounds of the pleura and lung. It may, however, occur in other conditions, such as injury or disease of the mediastinum, notably from rupture of an aneurysm or from erosion of vessels by new growth. In cases due to causes other than injury, the condition is usually serious and often rapidly fatal.

The general principles of treatment of hæmothorax after injury have been established by the large war experience of this condition. The report in the "Official History of the War" on Wounds of the Chest, by Prof. T. R. Elliott,[21] to which I have already referred, should become a classic. It gives a clear statement of the general principles upon which chest wounds should be treated, and affords a striking example of the advantages of friendly coöperation by physicians and surgeons.

Prof. Elliott states that prompt surgical treatment can diminish considerably the number of early deaths, and can lessen the period of invalidism by preventing the development of empyema. Thoracotomy and excision of the wound proved to be of the greatest service. He points out that "during the first three weeks all patients must be carefully watched for possible development of intrapleural sepsis, and after that period they need steady attention in order to ensure good expansion of lungs that may have been collapsed beneath a hæmothorax or an empyema." It was found, as was well known previously, that operation was unnecessary in cases of uninfected hæmothorax of small size, such cases nearly always recovering without interference. With large effusions causing any dyspnœa or distress, early aspiration is practicable and advisable, the theoretical objection that the hæmorrhage might recur being unfounded, since clotting of the effused blood takes place with little delay. Early operation is indicated in cases of large simple hæmothorax in a state of massive clot.

In acute infected hæmothorax, infection may spread virulently through the hæmothorax within 24 hours of the wound, while sometimes it may be present and not afford clinical evidence for days. At the earliest evidence of sepsis, whether rise of temperature, development of other general symptoms from examination of the fluid withdrawn, operation, and drainage as soon as possible are recommended. In view, however, of the experience of the Empyema Commission in septic pleural conditions, it would be well in such cases to aspirate repeatedly or to drain by a closed method until frank pus is obtained.

Another condition in which primary and early operation is advised is in abdomino-thoracic wounds with injury of the diaphragm, especially on the left side.

Tumours of the Pleura.

These may be either simple, such as lipoma, fibroma, and perhaps chondroma, or malignant, of which the chief varieties are endothelioma and sarcoma of various kinds.

If a simple tumour is of sufficient size to give rise to symptoms, it should be removed. Malignant tumours of the pleura are rarely diagnosed at a stage when operation is practicable. Cases of endothelioma sometimes commence in a localised form, and if diagnosed should be submitted to the surgeon. The early development of fluid complicates the problem of diagnosis, but we may hope that the earlier use of X rays and possibly diagnostic pneumothorax and thoracoscopy may render some of these cases amenable to early operation, with a chance of success

Surgery in Mediastinal Conditions.

There is at present only a restricted field for surgery in the mediastinum. With characteristic ingenuity, surgeons have worked out methods of access to the various divisions of the mediastinum. The anatomical difficulties have been overcome. The real bar to any extensive surgical operation is the loose areolar tissue which intervenes between the important organs situated in the mediastinum. Once infection reaches this tissue, it is difficult to limit its spread.

The superior and anterior mediastina are readily exposed by splitting the sternum. This operation of anterior mediastinotomy was first described by Milton, of Cairo,[22] in 1897, and has recently been extensively employed. The posterior mediastinum can be reached by an operation in which ribs are divided and shingled upon one another after certain sections have been removed. This is Lilienthal's [23] modification of the older operations of Bryant and Enderlen. It is known as posterior mediastinotomy.

The mediastinum can also be reached by a transpleural route after thoracotomy, and this mode of entry is used for certain tumours. The chief conditions in which the physician may require the surgeon's aid are: (1) suppurative mediastinitis, (2) mediastinal tumours and cysts, (3) mediastinal emphysema.

Suppurative Mediastinitis.

This may be either acute or chronic. The acute cases may be traumatic from penetrating wounds or crushing injuries. Perforation and injury of the œsophagus, and ulceration or injuries of the trachea and bronchi from inhaled foreign body, disease of the sternum, vertebræ, or ribs, may all lead to suppuration in the mediastinum. Suppurative conditions of the lungs, pericardium, pleura, or peritoneum may extend into the mediastinum. A suppurating hydatid or dermoid cyst may rupture into it. An empyema near the mediastinum may give rise to the "mediastinal syndrome," as pointed out by Dieulafoy, although the condition is really extra-mediastinal.

The suppurative process is very liable to spread widely, in which case the condition is almost hopeless. On the other hand, if it become localised, it can be reached by the surgeon and drained.

Chronic mediastinal abscesses are usually the result of tuberculous conditions of the mediastinal glands or of the bony walls of the mediastinum. They are usually to be treated like other "cold" abscesses, by aspiration and injections. If due to other causes, drainage is to be effected if practicable.

Mediastinal Tumours and Cysts.

It is in this connexion that the most useful developments of surgery have occurred. Encapsulated tumours and cysts can as a rule be removed readily and without undue risk.

Among the tumours met with are mediastinal goitre, lipoma, chondroma, myoma, fibroma, osteochondroma, and ganglion-neuroma. The cystic

tumours may be dermoids or teratomata. Echinococcus cysts may occur. Tumours of the thymus may also be met with. In general, if diagnosed, these tumours should be removed, since they may grow and rapidly cause signs of mediastinal pressure, or they may become malignant.

We have had a series of cases of teratomata at the Brompton Hospital. In one of my own cases the condition had caused five years' ill-health, beginning with an empyema. It was not until operation that the nature of the tumour was discovered. The result has been most satisfactory.

The mode of access is a matter for the surgeon. Tumours of the superior and anterior mediastinum are generally easily reached by Milton's sternum-splitting operation or by a modification of it.

Malignant Growths of the Mediastinum.

A large majority of primary growths in this situation are sarcomata. It is often difficult even at a necropsy to be certain where growths in the mediastinum have originated, since secondary glandular involvement is early and frequent in malignant growths of the bronchi, lungs, and pleura, while secondary deposits from primary growths at a distance are common. The chances of diagnosis of primary mediastinal malignant growth at a sufficiently early stage to warrant surgery are at present small. Naturally the question arises whether by any decompression procedure the pressure exerted by these tumours can be relieved. Attempts in this direction have been made, especially by sternum-splitting, notably by Aurousseau and by some American surgeons. Unfortunately the conditions are not comparable to those in cerebral compression, since these growths erode, infiltrate, and obstruct rather than compress vital structures like the trachea, bronchi, and great vessels. The relief usually afforded therefore by such decompression procedures is small and not commensurate with the severity of the operation.

Emphysema of the Mediastinum.

As a result of injury to the trachea or bronchi, acute mediastinal emphysema may result, spreading to produce general subcutaneous emphysema. In rare cases, where great dyspnœa and distress occur, it may be helpful to make an incision near the jugular fossa and endeavour to extract the effused air by suction.

THE FUTURE OF THE SURGERY OF THE CHEST.

If I had any wish to don the mantle of the prophet, the following paragraph, which I found in a work on the surgery of the chest, published in 1896, would make me pause:—

"It is sometimes said that surgeons 50 years hence will think as little of our results as we think of the methods of 50 years ago. So far as regards the surgery of the chest, this is utterly untrue. Fifty years ago it had risen above the horizon, it is now nearly at its zenith. Indeed, it is possible that we may see its upward movement checked; there are signs that some of the operations that have been proposed and performed for apical phthisis and for bronchiectasis are falling out of favour with surgeons."

None the less, I must confess that I feel optimistic in regard to the future of this branch of surgery. At the present time an opened pleura properly safeguarded need have no greater terrors for us than an opened peritoneum. May we not hope for great advances in the surgery of the chest, comparable with those which followed the earlier cautious and much-criticised opening of the peritoneum?

I have good reason to know that our British chest surgeons can give us real help in the treatment of some of our difficult cases, and, fortunately, sometimes most in regard to those who outlook apart from surgery is distressing and gloomy. Our surgeons have the experience, and need only greater opportunities to develop and improve the measures now employed. Some of these, like paravertebral thoracoplasty, have already evolved to a high degree of scientific and practical adaptation to the object for which they have been designed. Others, such as lobectomy, are still in the stage of evolution. I still hope that further improvements are possible, even in thoracoplasty, and that in the future improved methods of pneumolysis may emerge. In this hope I am encouraged by the experience of having seen phrenic paralysis develop from a relatively ineffective operation into one of wide application and usefulness as a result of modifications in its technique.

My last duty is to express my sincere thanks to all my colleagues at the Brompton Hospital, who have generously placed their records and their experience at my service. In particular, I must mention Dr. L. S. T. Burrell, who has himself done so much to advance these new treatments, and Dr. Stanley Melville, who has assisted me greatly by the radiological investigation of my cases, and by advice in regard to these lectures. Dr. R. C. Wingfield, at the Frimley Sanatorium, has also frequently helped me by stimulating suggestions and by his great interest in this subject, as well as by giving me the benefit of his experience in patients sent to the sanatorium. To Mr. Tudor Edwards I owe a special debt of gratitude, not only for his ever-ready and kindly help while these lectures were in preparation and for his suggestive criticisms, but also for the skill he has shown in the treatment of my patients. Mr. H. Morriston Davies has also freely accorded me the benefit of his assistance and of his criticism. Dr. W. Ernest Lloyd and Dr. D. T. Davies have kindly helped me in looking up references.

Lastly, I have to express to you, Sir, and to the College, my heartfelt appreciation of the honour conferred on me by the invitation to deliver these lectures. My only regret is that I have not been able to make them more worthy of the occasion and of the subject.

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ROYAL LIVERPOOL CHILDREN'S HOSPITAL.—Mr. Andrew Gibson, of Carlisle, has given £15,000 towards the cost of completing the Heswall branch of this hospital. This gift will provide two more wards with accommodation for 60 children and bring the number of beds in the branch to about 240. Mr. Gibson has previously contributed £30,000 to the funds of the hospital.

LONDON TEMPERANCE HOSPITAL.—The approval of King Edward's Fund has been given to plans for providing additional accommodation at this hospital in Hampstead-road. The pathological, massage, electric, and sunlight departments are to be rehoused at a cost of about £30,000, which has yet to be obtained. The scheme includes accommodation for private patients able to pay from 4½ to 7 guineas a week.

HYSTERIA AND THE WORKMEN'S COMPENSATION ACT.

BY A. WILSON GILL, M.D. EDIN., M.R.C.P. LOND.,
SENIOR HONORARY ASSISTANT PHYSICIAN, NORTH STAFFORDSHIRE ROYAL INFIRMARY.

DURING, and for some time after, the war years most medical men came in contact with hysterical disorders, resulting from wounds, in soldiers who previously had been perfectly fit for war service. Many of these disabling conditions resulted from very trivial causes, and were very difficult to cure by ordinary therapeutic measures. It soon became apparent that there was a large psychological element present which was not touched by physicotherapy, and in consequence of the great wastage from this cause the army authorities created special hospitals to deal with these cases. It was my good fortune to be attached for a period of 12 months to the staff of the Seale-Hayne Neurological Hospital, then under the command of Colonel A. F. Hurst, where special attention was paid to the rapid cure of hysterical symptoms by intensive psychotherapy (Hurst and Symns [1]). The results were more than gratifying, and the men were speedily returned to hard work—e.g., potting, farming, printing. Classes of medical officers were sent for courses of fortnightly tuition, and by means of lectures and actual demonstration very soon became proficient in curing hysterical symptoms. Every medical officer had equal success, and no special gifts of therapeutic skill were required, except the certainty that the condition was indeed hysterical and therefore curable. In fact, the definition of hysteria adopted—viz., "Hysteria is a condition in which the symptoms have been produced by suggestion and are curable by psychotherapy," is probably the best definition to-day. We believed that an hysterical state, as such, did not exist until symptoms produced by suggestion were actually present (Hurst [2]) and that such symptoms could occur in any individual under sufficient provocation. Dubois [3] says: "Man in his normal state is much more credulous than he supposes himself to be—in fact, he is suggestible in the highest degree."

In the soldier, the suggestion was produced by injuries, including gassing, at a time of stress, anxiety, and fatigue. No matter how severe or how trivial the injury, the hysterical symptom which followed was similar. A very superficial scratch on the arm was just as liable to be followed by a complete flaccid paralysis as a fracture of the humerus. The development of the hysterical symptom coincided very often with a desire to escape for a time from the dangers of the firing line, and was a means of securing a period of army service at home. This does not mean that the man was a malingerer. The hysterical patient is not a malingerer; his symptoms are genuine but do not depend on organic disease, although they may be created by organic disease.

The wonderful success obtained by psychotherapy is so well known that it is difficult to understand why so many cases of hysteria are still treated in hospitals by drugs, massage, electricity, and orthopædic exercises. Hysteria is a psychic disease, and a psychic disease needs psychic treatment (Dubois). Many of the medical lessons of the war seem to be already forgotten. Similar cases occur in civil life, and equally rapid and satisfactory cures have been performed by my various house physicians. Dr. R. R. Gamble is responsible for the following two cases:—

CASE 1. *Hysterical paralysis and aphonia following appendicectomy; five years' duration. Cured in one day.*—Female, aged 28, postal clerk, was examined on August 22nd, 1927, because of inability to walk without support, loss of voice, and constant pain in the right iliac region, since removal of the appendix five years before. Her own doctor, after examination under an anæsthetic, diagnosed an hysterical condition. She was admitted to the North Staffordshire Royal Infirmary on August 27th, and my house physician, Dr. Gamble, cured the aphonia completely in two hours and on the same afternoon encouraged her to walk. Further explanation removed the pain in the right side and she was discharged quite well on Oct. 5th. There has been no relapse.

CASE 2. *Hysterical paralysis following influenza: three years' duration. Complete recovery in one hour.*—Nursery attendant, aged 34, three years ago developed influenza associated with severe pains in the joints, and was confined to bed for two weeks. On getting up she could neither stand nor walk, but this gradually improved until two years ago, when she had a recurrence of influenza with almost complete inability to walk since. As there were no evidences of disease in the central nervous system, a diagnosis of hysteria was made. She was admitted to the infirmary on August 29th, 1927, and Dr. Gamble, by explanation and persuasion, succeeded within an hour in making her walk, run, skip, and jump. She was discharged on Sept. 1st, and there has been no relapse.

Once the diagnosis of hysteria is made—and this requires a complete examination—it should be proved by its psychotherapeutic cure. It does not matter what the nature of the symptom is or how long it has been present, a cure should certainly result if the doctor is confident of his diagnosis and confident of his skill.

In war time, however, difficulties in treatment immediately arose with the admission of the pensioner. These men discharged from the army found the cost of living at home on their pension a serious problem, were unable to find suitable work, and nursed a grievance. Many of them showed no inclination to get well, and because they were no longer forced to submit to army discipline, and because of their right to discharge themselves from hospital at any moment, a different spirit pervaded the hospital, and rapid cures were less easy to attain. Captain A. Robin [4] divided them into three classes: (1) those who were anxious to make a complete recovery and earn their own livelihood even if it entailed the loss of the pension; (2) those who preferred to retain their pension rather than get well; (3) malingerers, whose disability was feigned and who had no intention of responding to treatment, although they accepted it cheerfully.

Compensation Cases.

Similar difficulties in treatment are met with in civil disability from accident, and I have rarely been able to secure a satisfactory result. That the fault is not entirely mine must be obvious, as the method used is exactly that which proved itself so successful in war time and which still proves successful in civilian cases where no litigation is pending. There are many points of similarity between the pensioner and the compensation case. It seems to me that the desire for considerable financial compensation is paramount in these cases, and I doubt if the Workmen's Compensation Act is altogether good for the morale of the workman. In several cases I found that appointments made were not held, that various excuses were made for non-attendance or late attendance, and it was not always easy to argue such remarks as "Why do I have to attend the infirmary for electrical treatment if there is nothing organically wrong?" or "My doctor says the nerve is damaged and I believe he is right." It was obvious that, as I was Medical Examiner for the Insurance Companies and not the patient's regular doctor, I never obtained his full confidence.

CASE 3. *Hysterical spastic paraplegia following a fall down ten steps; seven months' duration.*—Barmaid, aged 16, fell down ten cellar steps on Jan. 6th, 1927, sustaining minor injuries to the left eyebrow and the left side of the chest. She was kept in bed three days. Two weeks later she was admitted to the Union Hospital for difficulty in walking, a diagnosis of hysteria was made, and she was discharged after ten days uncured. During the next six months she became steadily worse and needed a bath-chair, as she could not walk at all. She was able, however, to progress along the floor upright on her knees.

No evidence of organic nervous disease was present, and I decided to admit her to the North Staffordshire Royal Infirmary. On July 1st, 1928, I worked with this girl from 11 A.M., and by 1 o'clock she was walking well with support but could not stand alone. No further progress, however, was then recorded, and at 4 P.M. I gave up because of other engagements. Many subsequent sittings were required before she could walk alone.

CASE 4. *Complete flaccid paralysis with wrist-drop of the right arm, following a superficial petrol burn; 18 months' duration; no improvement after months of massage and electricity.*—Lorry driver, aged 26, sustained a superficial but extensive petrol burn of the right arm on Jan. 19th, 1927. Healing was delayed but ultimately occurred and left no scar. Owing to the delay in healing he forgot how to use the arm, and complete flaccid paralysis occurred for which he was treated by massage, electricity, and other physical treatments for many months. It was not easy to persuade him that he was wrong in thinking "that petrol burns in and destroys the tendons," and I failed to cure him by psychotherapy after three sessions, each lasting one hour. He returned to treatment by massage and electrical stimulation.

It must be clear that treatment by argument and persuasion is difficult under these conditions. Nevertheless, most doctors are aware of the failure of treatment by massage and electricity, and of the necessity for psychological treatment. It is a pity, therefore, that so little effort is made to apply simple psychological principles, as I believe most of these hysterical disorders can be prevented by the man's own medical attendant. When litigation is at an end and the claim has been settled, physical measures are more likely to be attended by some success, for the man's anxiety has been relieved and he is keen to become a wage-earner again. There can be little doubt that many of these men believe they will be better off if they can secure a lump sum in settlement of their claim. Visions of a small personal business and the joy of being their own master arise in their minds. Too often, unfortunately, does the man invest this money in some business of which he has neither experience nor business capability, and in a short time he is worse off than before. In several cases I have found that the wife or daughter is given charge of the business while the applicant idles his time. These men find it very difficult to secure other employment, as most employers look askance at the man who has already had an accident and been paid a lump sum in compensation.

The following case shows how a man after the claim was settled speedily lost his symptoms and succeeded in spending the money.

CASE 5. *Hysterical gait following compound fracture of both bones of the leg, the result of a motor accident. Complete recovery on settlement of his claim.*—A motor-driver, aged 30, when driving a motor-cycle combination on Sept. 4th, 1926, collided with a motor lorry and sustained a compound fracture of both bones of the right leg. He was in splints and extension for 13 weeks, and was subsequently treated by massage three times a week until April, 1927. In July he was put in charge of a petrol-filling station, as he said he could not apply sufficient pressure with the foot to use the brake of a light car. Despite good bony union and alignment and full movement in the joints, he continued to walk with an awkward gait. On my advice compensation was stopped and the case was heard in court. The claim was settled for a lump sum. Within a week he had bought a new motor-cycle combination and was touring the countryside with vigour. His own doctor, who gave evidence on his behalf, subsequently confessed that my opinion as regards his capability to drive a light car was the correct one. Incidentally, the man was dismissed his employment because of slackness of trade.

The following cases are illustrative of a few hysterical conditions that have been examined by me recently, none of whom show any improvement despite prolonged treatment by ordinary physical measures.

CASE 6. *Hysterical contracture of the fingers after falling; eight months' duration.*—Labourer, aged 30, fell on some planks on Oct. 15th, 1927, bruising his right fingers. He continued at work for a few days despite pain and swelling, and then consulted his doctor. An X ray photograph showed no broken bones or damage in the joints, but despite all local treatment the fingers remained flexed and could not be extended. He did not return to work until January, 1928, but gave up because of pain and tried again in February. Examination showed that the right hand was clammy with the fingers semi-flexed. He could not straighten the fingers voluntarily, and attempts to do so were resisted by active spasm of the flexor muscles. The condition was recognised by his doctor as being "functional," but no attempt was made to teach him relaxation.

CASE 7. *Hysterical wry-neck after a blow on the head; 14 months' duration.*—A collier, aged 40, received a blow on the head from a tub coming off the rails on March 18th, 1927. He was stunned for a few minutes but was able to resume work and finish the shift. His doctor ordered liniment. On March 24th, 1927, he returned to work but gave up because of pain and stiffness in the neck. He then commenced treatment by massage and electricity, which was continued regularly for a period of 13 months but without benefit. X rays showed no fracture and eventually a neck support was ordered which, however, the man refused to wear.

On examination the head was found to be bent forcibly towards the left shoulder, and he was unable to lift it by his own efforts. Attempts to overcome the spasm were resisted by clonic movements of the head, but in a few minutes the head was erect and remained so without support for a few seconds, thereafter resuming the shoulder position. There is no doubt that this is a case of hysterical wry-neck, the position adopted being the one in which he got most relief at the time of his injury. It has been perpetuated long after the necessity for it has passed away. The man's idea of incurability was fostered by the failure of prolonged massage, &c., and yet after a few minutes' gentle persuasion the head was erect and no doubt further re-education would have enabled the man to keep it so.

CASE 8. *Hysterical tremor and slight stammer after compression between two motor-buses; similar condition in 1915 from shell-shock.*—A bus conductor, aged 40, got momentarily squeezed between the back of his stationary bus and the oncoming radiator of another. He was taken to the Royal Infirmary but discharged the same night, as no injuries were discovered. Next day he was trembling all over and had difficulty in speaking. Examination failed to reveal any organic nervous disease, and the tremor was a typical hysterical coarse tremor. A similar condition had been present in 1915 as the result of shell-shock, and he was cured of this in a London hospital on psychological lines with complete recovery.

The variety of symptoms which can occur is legion. The commonest are paralysis of a limb—either flaccid or spastic, contractures, tremors, stammering, awkward gait, and bent backs. Less common are defects of vision and hearing. The symptom most difficult to decide upon is probably pain, but this symptom is just as likely as any other to be perpetuated by suggestion in the man's mind long after the original cause of the pain has been removed. For example, very few surgeons are troubled by complaints of pain in the scar following the radical cure of hernia in private cases, but I have rarely come across a compensation case who did not complain of pain in the scar, despite the fact that otherwise the operation was a success. Too often this pain is encouraged by a medical opinion that a nerve is involved in the scar, and I have even known a second operation performed to relieve this nerve-ending, but without the promised relief. The psychic element is too often overlooked.

In spastic conditions of muscle pain probably does exist to some extent, but this is a physiological result of a constant state of cramp. Immediate relief comes when the man learns to relax the spasm, but this relaxation requires a mental effort; treatment by baths, massage, and electricity invariably fails. Captain S. H. Wilkinson,[5] while recognising that there can be no more powerful source of suggestion of hysterical pain than pain due to organic causes, nevertheless succeeded by explanation and persuasion alone in curing many such cases as readily as the more obvious hysterical conditions. He found that long-continued treatment by drugs and other physical measures increased his difficulties, as their failure to cure merely tended to fix more profoundly than ever in the patient's mind the conviction of his incurability.

The following case is undoubtedly a case of hysterical perpetuation of pain.

CASE 9. *Injury to the back seven years ago; constant pain; doubtful X ray picture; hysterical perpetuation encouraged by wearing plaster jacket for four years.*—A labourer, aged 41, fell backwards on Dec. 28th, 1921, and hurt his back. He continued at full work until April 21st, when he gave up because of pain. Since then he has done no heavy work. X rays have been taken at various times and, while many of these have reported "nothing abnormal," others reported "fracture of the fifth lumbar spine." In consequence of this discrepancy a belt was ordered and, despite the fact that he could move freely, special exercises and massage were also given. In April, 1924, a plaster-of-Paris jacket

was supplied by a surgeon who is stated to have remarked: "Unless you are careful, you will be an invalid for life." This jacket was kept on continuously for four years until removed by order of the Court in May, 1928. More X ray photographs were taken and the radiologist reported: "No evidence of injury or disease throughout the entire spinal column. Congenital condition of the spine of the fifth lumbar vertebra present." Contrary evidence was given that this was a fracture and also that some osteo-arthritis was present higher up, and the man was granted three months to recover without his jacket and recommended to try work after that time.

This case, I suggest, is one of hysterical perpetuation of pain, whether a fracture was originally present or not. Failure to cure depended largely on the unfortunate remark of the surgeon who applied the jacket and the prolonged wearing of the latter. A plaster support is no doubt a correct line of treatment for a few weeks until the fracture has healed, but continual application for four years is a disaster.

These few case notes are taken from recent examinations. Similar instances could be multiplied many times.

Treatment.

I have already hinted that the best treatment is preventive. Cases of accident should be carefully and fully examined at the earliest opportunity and an attempt made to form a correct diagnosis. Only in this way can the patient feel confident that nothing has been overlooked, while the doctor has the right to argue away the patient's fear of permanent incapacity. Too often radiographic examination is deferred for many months. If a fracture is found fixation or mechanical treatment is necessary. If no fracture is found the indications are to encourage movement. Undue rest in bed should be discouraged, and the patient taught to rely on his own efforts from the beginning. Too much stress should not be placed on treatment by massage and electricity, unless the patient is taught by the masseur to take an active interest in the proceedings. Hurst[6] relates how he has seen patients being massaged while reading a book or newspaper. Masseurs should have more tuition on the elements of psychotherapy.

I have never seen much benefit from the usual varieties of spinal support. It is impossible to assume that they are successful in causing fixation of the spine, but if they are applied they should be frequently changed and re-examination made. Prolonged treatment of fracture, joint injuries, and contusions by splints, plasters, and other methods of fixation often results in the adoption of a faulty posture or gait which can readily become permanent, as the muscles have adapted themselves to a new tonal length. Re-education is the only method of curing such disabilities and this, no doubt, is the result of the great success of bone-setting, osteopathy, and similar therapeutic measures.

It is obvious from the cases quoted that a little encouragement from the onset would have prevented months of incapacity. The man often believes that the sinews are destroyed or the nerve damaged, and desires his own doctor's assurance that his fears are without foundation. Such assurance is too seldom forthcoming. Only a medical man can diagnose between an hysterical and an organic paralysis. If no organic signs are present, then the paralysis exists because the man thinks he is paralysed, and he should be disabused of his idea and taught to use the affected muscles again. In the early stages the idea of disability is quite superficial and easily removed, but the longer it is allowed to persist and the longer psychological treatment is delayed the more deeply rooted becomes the suggestion and the more difficult to cure. In long-standing cases rapid recoveries are still possible under good conditions, but the general practitioner has lost his chance, and facilities for intensive treatment are difficult to obtain. Symns,[7] in an excellent paper, states that "no patient should be allowed to be in bed when he can be in a chair, and no case should be confined to a chair when he can walk." The doctor must continually stimulate the patient by his personality and energetic encouragement must be given at each visit. Too often is the bedside manner a name for a long countenance and another bottle of medicine. No doctor should be satisfied if his patient develops a paralysis—e.g., a dropped wrist, while the electrical reactions are shown to be normal; nor should a case be labelled hemiplegia if there are no signs of organic disease; nor should, in fact, any diagnosis but hysteria be made unless physical signs are present to support it.

The hysterical element must be looked for in all chronic diseases such as sciatica, rheumatoid arthritis, &c., and the practitioner will often be surprised at the wonderful recoveries which are possible, even after many years of pain and suffering. This hysterical element is probably present in all cases of chronic deafness, as most deaf people make little effort to listen. Even cases of complete blindness were cured in war time, after examination had shown that no organic disease was present and the optic nerve and tracts were intact—yet these had passed through the hands of several eye specialists without recognition of the functional element.

Once the condition is established, the cure requires time, enthusiasm, and confidence in oneself, and the difficulty in private practice is chiefly the lack of time. There is still need for special hospitals where whole-time medical officers can tackle these cases and where an "atmosphere of cure" can be developed. At Seale-Hayne Hospital, as no doubt in others during war time, the atmosphere of cure was encouraged. A patient coming into hospital with an hysterical condition was left for about two days before treatment was started. During this time the already cured cases in hospital would convince him that his recovery was certain and, as many of our cases were treated in the open in full view of the inmates, he would see for himself that such things did happen. A full examination was always made, and once we started to cure we were never satisfied until the cure was complete. A full explanation of the condition was given to the patient, showing how he had developed the idea of incapacity from his wound or injury. Encouragement was then given him to try to overcome his disability. In cases of flaccid paralysis, for example, he was encouraged to contract the weak muscles and his attention drawn to any slight flicker of the muscle which became apparent. In cases of spastic contracture he was taught to relax the contracted muscle. Both contraction and relaxation require voluntary effort on the part of the patient and reliance should not be placed on massage or electricity. No attempt at deep psycho-analysis is required. In some cases of hysteria this treatment is probably ideal, but it is not feasible for the busy general practitioner, and is generally quite unnecessary for the removal of symptoms.

The stages of treatment recommended are explanation, persuasion, and re-education. Under the latter term is included the correct use of the muscles, and it is well not to be satisfied with anything short of perfection. We found that if we stopped half way the ultimate stages were prolonged.

Occasionally, treatment went on for several hours, and in these cases a resistant patient eventually had to give way to a persistent doctor.

It has been written of hysteria: "The patient says—I cannot; the nurse says—he will not; the doctor says—he cannot will." I would suggest that this maxim is responsible for much of the apathy and neglect shown towards hysterical patients generally. The hysterical patient certainly can "will," but he has to be encouraged to do so, and failure to cure will most certainly result if he is treated as a malingerer. In Workmen's Compensation cases I have occasionally heard blame applied to the solicitors who are engaged in the man's interests, but no blame can be attributed to them. They cannot be expected to differentiate between an organic and an hysterical state. The blame must be accepted by the medical profession. There are very few conditions where the diagnosis offers great difficulty if a correct and full examination is made.

I must acknowledge my great indebtedness to Dr. A. F. Hurst for most of the teaching incorporated

in this paper, and to my various colleagues at Seale-Hayne Hospital whose papers on hysteria have been freely used and are now gratefully acknowledged.

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OTOSCLEROSIS.*

With a Note on its

TREATMENT WITH PARATHYROID EXTRACT.

BY E. WATSON-WILLIAMS, *M.C.*, CH.M., F.R.C.S. EDIN.,

SURGEON-IN-CHARGE, EAR, NOSE AND THROAT DEPARTMENT, ROYAL BRISTOL INFIRMARY.

THE following table sets out a convenient primary division of deafness, with the associated results of the classical tuning-fork tests.

—	Ear deafness ("conduction").	Nerve deafness ("perception").
Cause.	Interference with transmission of sound waves.	Interference with transmission of nerve impulses.
Lesion.	Peripheral to organ of Corti.	In or central to organ of Corti
	Tuning fork 256 d.v.	
Rinne.	On mastoid heard better† than at meatus. (Rinne negative.)	On mastoid heard worse than at meatus. (Rinne positive.)
Schwabach.	On mastoid heard better than on normal mastoid. (Bone conduction increased.)	On mastoid heard worse than on normal mastoid. (Bone conduction diminished.)
Weber.	On vertex heard better in deaf ear.	On vertex heard worse in deaf ear.

† i.e., the tuning-fork which has ceased to be heard at the meatus is again heard when pressed in contact with mastoid.

There is never (except perhaps in hysteria) an increase in the "true" bone conduction in disease—that is to say, if the patient be tested against a normal person, in *each case* blocking the external meatus so as to produce ear deafness, it will be found that bone conduction for the normal ear is as good as or better than for the deaf. Emphasis is laid above on the organ of Corti, the point at which sound waves are converted into nerve impulses, as the logical and proper division between the two groups of deafness. Obviously, anything causing nerve deafness will tend to mask simultaneous ear deafness. But a plug of wax, on the one hand, for example, or, on the other hand, damage to the scala tympani by removal of perilymph, give exactly the same results to these tests, which, in both cases, indicate ear deafness. In this connexion, such terms as "middle-ear deafness" or "internal-ear deafness" are misleading, and better avoided.

Otosclerosis may be defined as a disease starting in the bony capsule of the labyrinth and characterised by rarefaction and later overgrowth of bone, often with eventual obliteration to a greater or lesser extent of the cavity of the internal ear. The radiography of the petrous bone presents difficulties, both in technique and in interpretation, so that we are usually compelled to make our diagnosis of this condition from clinical

* Based on a Bristol University post-graduate lecture.

Differential Diagnosis.

Catarrhal otitis media.	Otosclerosis.
Sexes about equal.	Three out of four females. Definite familial tendency.
Onset at any age not rare in children. Adults often give history of ear disease in childhood, followed by period of freedom.	Onset in over half the cases between 16 and 26. Smaller group starts about 40; later onset rare. Very rare in children.
Many patients "subject to colds" or show nasal obstruction, rhinitis, sinus disease, or adenoids.	No special catarrhal tendency. Many patients have poor circulation or suffer from chilblains.
First symptom, usually deafness or, in children, earache. Vertigo may precede deafness by months or years. Tinnitus may accompany or follow deafness.	First symptom, usually deafness, not pain. Tinnitus may precede deafness by months or years. Vertigo rare and late.
Generally hears worse in noise. Paracusis not common.	Often "hears better in noise" (paracusis).
Hears worse with a cold.	Occasionally hears quite well with a cold ("paradoxical").
Tinnitus very variable both in kind and degree: "bells, clicking, popping, buzzing steam, machinery."	Tinnitus usually continuous; may vary in degree, often worse at night, but noise generally of one type; "humming, singing, like telegraph wires"; tends to be high pitched.
Vertigo may be very severe in old cases, with falling nausea, and vomiting. Change in deafness and tinnitus may herald attack.	Vertigo mild.
All symptoms tend to be worse in wet (rather than cold) weather.	Weather does not much affect the condition.
Onset generally referred to a "cold" or exanthem.	Onset very insidious, often during good health; may be ascribed to following:
Progress often related to a series of colds with remissions or stationary intervals.	Progress steady, may be much accelerated by pregnancy, lactation, acute illness, severe hæmorrhage (? worry).
Symptoms often improve during convalescence.	Symptoms may first attract attention during convalescence.
Pain only during acute exacerbations.	Dull ache in ear not rare. Cerumen sometimes deficient.
Tympanic membrane usually shows changes; scarring, retraction, thinning, &c.	Tympanic membrane often normal; sometimes shows cerise flush.
Bone conduction increased.	Bone conduction much increased.
Rinne negative.	Rinne negative (15" or more).
Low fork (32 d.v.) well heard, at least by bone conduction.	Low fork (32 d.v.) not heard at all, or very poorly.
Inflation of middle ear may diminish deafness, change tinnitus, or produce vertigo.	Improvement on inflating middle ear slight or transitory.
Patients get habit of self-inflation (Valsalva). Blowing nose or swallowing may cause "popping."	Often a flat, even toneless voice.
Auscultation during inflation shows Eustachian stenosis and middle-ear "stickiness."	Auscultation during inflation shows normal or unduly patent Eustachian tube.
One ear may escape, at least for a time.	Both ears generally show signs, even if symptoms are unilateral.
In late cases some nerve deafness may occur.	Many late cases show nerve deafness (T.F. 256).
Relief of nasal disorders, by operation if necessary, often beneficial.	*Operations never beneficial, often definitely harmful.*
Local (aural) treatment of great value in many cases.	*Local treatment entirely useless.*

observations. A lesion in this situation we should expect, in the early stages, to produce ear deafness, and in fact our best clinical definition of the disease remains the "triad of Bezold"—increased bone conduction, a negative Rinne test, and a raising of the lower end of the audible scale. We have, then, gradually increasing ear deafness without discharge or (much) pain, but generally accompanied by tinnitus, which may cause more discomfort than the deafness.

Differential Diagnosis of Catarrhal Otitis Media and Otosclerosis.

Clearly there is a close resemblance between otosclerosis and catarrhal (cicatricial) otitis media. Yet from the point of view of treatment it is important to distinguish these diseases. Catarrhal conditions of the upper respiratory tract are relatively common. Indeed, though in the south-west catarrhal otitis seems three or four times more frequent than otosclerosis, neither condition is rare, so that they must occasionally coexist. Consideration of numbers of cases apparently typical of either condition will enable us to draw up a series of contrasts. In applying it, too much emphasis should not be laid on individual points, such as the exact words used by the patient to describe tinnitus, or the presence of minor abnormalities of the tympanic membrane; the latter are very common and bear little relation to the existence or degree of deafness. Few patients will present all or even a majority of the characteristic features. If the low forks are well heard the condition is very probably otitis media; on the other hand, a definite family history or onset in connexion with pregnancy is suggestive of otosclerosis. If in every case we regard the clinical picture as a whole we shall find as a rule little difficulty, at least after some experience, in making a confident diagnosis.

The Treatment of Otosclerosis.

The statement that local treatment is entirely useless epitomises the disappointing experience of many otologists, including myself. Medicinal treatment has been along several lines; iron, arsenic, strychnine; bromide, valerian; aloes, mercury; phosphorus, calcium, iodide, spa, light, and vaccine treatment have all been tried. Such a list tells its own story of failure. The ætiology of otosclerosis remains obscure. The old ideas—that it was a manifestation of congenital syphilis, or an osteitis secondary to otitis media, and the suggestions that it was produced by alimentary, focal, or metabolic toxins—have all been abandoned; it seems agreed that the lesion is not inflammatory, and the patients as a rule afford no other evidence of these conditions. The definite familial tendency, although the disease has not been shown to obey Mendelian laws, supports the view that a phylogenetic anomaly is concerned. But if so, some further factor is needed to activate the latent defect. It has been suggested that a defect in the calcium metabolism supplies the solution. It is true that administration of calcium is ineffectual, but this is true of other calcium disturbances. Such a defect would help to explain the effects of pregnancy and lactation, and the association with chilblains (which I have not found recorded elsewhere). Moreover, recent work tends to show that such a defect can be demonstrated in the blood of otosclerotics.

The treatment of this condition by gland substances is not new. As far back as 1910 thyroid gland was employed, and more recently ovarian, pituitary, and adrenalin have been tried. I have not obtained any notable success with these—possibly because I was using parathyroid-free thyroid. But a little over a year ago, impressed by the association with chilblains, I began to employ parathyroid gland, a line of treatment that I find has been suggested by several authors, though no record of results is available. The improvement with my first two cases was so definite as to encourage me to a wider use, and I have now treated 15 females and three males, subjects of typical otosclerosis. In addition to these, I have had several less well-defined cases and a number who have begun treatment too recently to assess results. A small series of patients with catarrhal otitis and severe tinnitus was also treated, but without any effect. The results obtained in 18 cases are:—

Complete or practically complete relief ..	3
Great improvement	8
Some	2
Improvement slight or none	5

Effects of Parathyroid Extract.

The first point of interest was that practically all the patients volunteered the statement that they felt "much better in themselves" apart from any aural change. Several of them had been brought by experience of various forms of treatment to an attitude of scepticism regarding all therapeutic efforts, which I could readily understand and which I formerly shared; in these, the improvement occasioned rather pathetic expressions of gratitude. Two long-standing cases that I summoned for a post-graduate demonstration (as being characteristic cases) had so much recovered as to prove quite useless for that purpose. The dose of dried parathyroid was, at starting, gr. $\frac{1}{2}$ or gr. $\frac{1}{3}$ daily, cautiously increased to grs. $1\frac{1}{2}$ or 2. In a few patients earache has necessitated intermission of treatment; it ceased promptly when the drug was withdrawn. There have been no other signs of intolerance. No bromide, tonic, or local treatment has been given after starting the parathyroid. Technical difficulties have prevented any animal experiments to confirm the clinical results.

Case Reports.

CASE 1.—A shop-girl, aged 19, came complaining of tinnitus for three years, bad for one year, in both ears; and recent deafness, slight in right ear, moderate in left. "I can hear that people are talking but can't make out what they say." She thinks it followed a cold. Her mother's sister suffered from head noises all her life. The noises were never absent and were always of the same kind ("humming") but worse at night. "The deafness is worse in the quiet or when I am alone; I can hear all right in a noise." She suffered from dyspepsia, and very badly from chilblains every winter, and last year she had "nervous debility." She very rarely caught cold and had never had aural discharge or vertigo. The nose, pharynx, and accessory sinuses were normal. Tympanic membranes were normal, except that the left showed a well-marked cerise flush. T.F. 256; bone conduction increased many seconds R. and L. Rinne: Many seconds negative R. and L. T.F. 32; T.F. 64 not perceived in either ear.

Parathyroid treatment begun. After 4 weeks: Noises less and hearing definitely better. After 10 weeks: Noises nearly ceased. After 18 weeks: Headache—suspend treatment 2 weeks. After 24 weeks: Hearing fair on the right, normal on the left; no "flush" seen. After 30 weeks: Earache both sides; suspend treatment for 2 weeks. Noises quite absent by day, only slight at night. "I'm ever so much better." Hearing nearly normal on right, normal on left. T.F. 32; heard well (in fact bone conduction increased).

CASE 2.—Married woman, aged 30, complained of deafness in the left ear for two years, getting steadily worse, and mild tinnitus for many years. The family history was negative. The patient had one child aged 3. The hearing of the opposite ear was also impaired. "I can hear a mumble but can't grasp what people say." This was not affected by weather, and there was definite paracusis, but never any aural discharge. She had irritation but no pain in the left ear, and occasional aching behind the ears. There was some healed phthisis. She suffered from constipation, flatulence, and giddiness on rising from stooping and with the flatulence; and got chilblains every winter. The pharynx and nose were normal. She complained at every visit of post-nasal catarrh, but nothing was ever seen. The tympanic membranes were quite normal. T.F. 256. R. normal, L. diminished: bone conduction R. normal; L. much increased. Rinne: R. positive; L. long negative. T.F. 32: R. great loss of perception; L. no perception. T.F. 64: R. diminished perception; L. none.

Parathyroid treatment begun. After 2 weeks: "The tablets make me all of a heat." After 6 weeks: Pain behind ears; suspend treatment 2 weeks. After 14 weeks: Hearing in left ear now very good. After 18 weeks: Hearing apparently normal. "I'm much better in myself than I've been for a long time. The ears don't worry me at all now."

CASE 3.—A married woman of 36 came complaining of deafness of several years' duration—"four or five or more"—

severe for two years, attributed to family worries, her health being good. The father's family had goitre, the family history being otherwise negative. Her eldest child was aged 8 and the younger 1½. It seemed possible that the first pregnancy at 27 was the starting-point of her ear trouble, the second causing exacerbation. Tinnitus, "like bells," was not severe, and she had no vertigo. Paracusis was well marked—volunteered statement. She never had earache or aural discharge; her voice was typically flat and toneless. She did not suffer from colds or catarrh, and her pharynx and nose were normal. The right tympanic membrane was slightly retracted, and the left showed cerise flush. T.F. 256; not heard by air; bone conduction much increased. Rinne: Very long negative. T.F. 32; no perception.

Parathyroid treatment started. After 4 weeks: "I feel better in myself." The hearing is definitely improved. After 13 weeks: Quite material improvement in hearing; no complaint of tinnitus (but this was not conspicuous before). The improvement in hearing has been remarked by patient, husband, and friends.

CASE 4.—A farmer, aged 28, came complaining of severe deafness beginning 12 years back—i.e., when 16. He had an operation on the nose at that time. His mother had been deaf since she was a young woman, and had been told that it was incurable and would not be improved by operation (almost certain otosclerosis). His own deafness became very much worse after severe influenza early in 1928; he had had a long course of inflation of the ears without benefit. Tinnitus was constant and severe in the right ear, sounding like "machinery," and in the left like "thumping." Nothing changed it. He had had one mild attack of vertigo recently and paracusis was well marked, but he never had aural discharge or pain. His general health was good and he did not catch cold. The Wassermann reaction was negative. His nose was normal with some post-nasal discharge, and the tympanic membranes were quite normal. He heard a shout at six inches with the right ear, but apparently nothing with the left. T.F. 256; definite diminution of bone conduction R. and L. Rinne: Long negative R. and L. T.F. 32; no perception at all. Upper tone limit practically normal.

Parathyroid treatment commenced. After 8 weeks: "I feel fine and have put on a stone." The hearing remarkably improved, observed by patient and relatives. After 13 weeks: The noises are inconspicuous, and the hearing still further improved; he is much encouraged. T.F. 256; bone conduction normal (? some prolongation.)

CASE 5.—A married woman of 38 came complaining of noises in the right ear, which began two months after an operation on her nose 18 months before; she also had recent slight deafness of both ears. Her family history was negative. The noises were constant, high pitched, unaffected by weather or anything else, and had not been improved by large doses of bromide or by regularly repeated aural inflations during 16 months. There was no paracusis (but the deafness was mild). She did not catch colds and never had aural discharge or pain or vertigo, but there was a constant feeling of heaviness in the head. Her nose showed rather a wide passage, with some post-operative atrophy, and excess of clear mucus everywhere. The tympanic membranes were retracted. T.F. 256; bone conduction increased R. and L. Rinne: Many seconds negative R. and L. T.F. 32; no perception.

Parathyroid treatment commenced; she was very sceptical of the results. After 14 weeks: "I'm much better. I feel better than I have for years." Both heaviness in head and noises have very materially diminished; hearing unchanged.

It is not claimed that the treatment is in any but an experimental stage, but it is simple, safe, and inexpensive and does not interfere with ordinary work. If only it leads others to investigate along the same lines, I trust that publication will not be considered premature.

A SCARCITY OF NURSES.—The East Suffolk and Ipswich Hospital is suffering from a scarcity of nurses. The recent epidemic of sickness affected so many nurses that one of the wards had to be closed, an event which has never happened before, and it still remains closed. Three years ago the period of training was reduced from four years to three; consequently the last of the nurses from the old, and the first from the new, period are completing their training simultaneously. The minimum age for the commencement of training has been reduced from 20 to 19. It has been impossible to open the maternity department for its proper work because it has been monopolised by motor accident cases. Complicated maternity cases are being treated in the gynæcological department.

SCHISTOSOMIASIS MANSONI.

BY DR. RAMESES GIRGES,
SURGEON, TANTA (EGYPT).

THE disease which is now known as *Schistosomiasis mansoni* is an endemic infection widely spread throughout Lower Egypt and in certain parts of Upper Egypt, and affects about one-quarter of the whole population. Tanta, where this study was made, is the centre of the largest endemic area of bilharziasis in the world. In over 4000 cases at my clinic I have noted two quite distinct types of the disease—viz., the intestinal and the hepatic—each of which runs its own course, presents definite stages, and has its special pathological lesions and clinical pictures, the one common feature being the presence of the *mansoni* worm. Even the ova, pathognomonic of this disease, are not constantly present; they are absent both in the first and fourth stages of the intestinal type and in the hepatic type. The latter is the more serious form of the infection. It is the condition known as Egyptian splenomegaly.

The intestinal type presents four stages—viz., febrile (toxæmic), dysenteric, papillomatous, and cirrhotic (repair). In fact the description of the disease as a dysentery is misleading; in only the second and third stages of the intestinal type do dysenteriform symptoms appear. Even so the patient seldom complains of dysentery, which is considered a natural event shared by most of the village folk. Furthermore, the hepatic type presents no dysenteric symptoms at all, but a toxæmic, a hepatomegalic, and an ascitic stage.

Epidemiology.—The disease is more frequent amongst villagers than in town inhabitants, and is almost limited to the fellaheen, fishermen, and fikies. It shows little preference for either sex, though more common in males. No age-period is free from it, but it is mostly found in the age-period 15–30. The infection occurs most often in the month of Baoonah (June).

Pathogenesis.—The cercariæ enter the body by piercing skin or mucous membrane, whence they reach the lymphatics and the general circulation, then the portal vein and liver. There they grow to the adult male and female worms. These events constitute the incubation period, and thus far the parasites inflict no apparent harm on the host. From the liver the adult females travel against the blood stream to their definitive position, the inferior mesenteric and middle and inferior hæmorrhoidal veins; during this passage they excrete toxins, for a febrile reaction in the host appears. This secondary migration is the main event provoking what I term the first or toxæmic stage.

The female in a venule in the intestinal submucosa lays her eggs very close to the intestinal lumen. By the action of digestive ferments elaborated by the embryos the eggs pass from the vessel to the surrounding intestinal wall. The postero-lateral spine of the ovum acts as a ratchet preventing it from returning into the vessel. The ova are thus gradually moved through the tissues until they are extruded into the gut lumen, and thence expelled from the body.

If the process were confined to this the disease would be benign. But in every case some of the ova fail to reach the gut lumen. A subacute inflammation is then set up by the mechanical irritation of the tissue by the ova and by the toxins they produce, and they become surrounded by leucocytes. If this "bilharziasis abscess" lies near the lumen of an intestinal gland it bursts and empties its contents into it. The damaged tissue rapidly heals and this process of egg-extrusion and abscess formation constitutes the second intestinal (dysenteric) stage. Multitudes of ova and a corresponding number of abscesses provoke a chronic diffuse inflammation of the mucosa and great epithelial proliferation. The adeno-papillomata thus formed characterise this, the third intestinal, or papillomatous stage. If the patient survive all this a fibroblastic reaction begins at the periphery of the

unevacuated abscess, slowly advances towards the centre, and forms the "bilharzial pseudo-tubercle," in which the ovum is surrounded by definite nodules of fibrous tissue. The tubercle, scar formation, and contraction make up what I term the fourth intestinal or stage of cirrhosis repair.

This is the usual picture where male and female worms are present in more or less equal numbers. One sex only may be present, for the descendants of one miracidium are of one sex only—male or female. If the males markedly predominate or are the only sex present (the condition in most of my cases), there exists, besides the mechanical and irritative lesions, others which are purely toxic in nature. These cases show diffuse hepatitis, obviously not caused by ova, oviposition, or by coupling, but by toxins, either elaborated by the adult worms or provoked by their presence. The males when adult wait in the liver for the arrival of their females, and do not migrate to the mesenteric regions. The purpose of that journey, oviposition, is lacking for them. The worms in the body of the host provoke a partial immunity which prevents the arrival of new parasites to mate with those already in the liver, and so the case remains a hepatic bilharziasis, the intestinal lesions being negligible. This constitutes the so-called Egyptian splenomegaly, or what I term hepatic bilharziasis.

Intestinal Type.

My division of the course of intestinal bilharziasis into an incubation period and four stages is in accordance with its pathology. But symptoms characteristic of one stage may appear in other stages. Thus there may be fever side by side with oviposition in the second; oviposition with papillomata in the third, and both phenomena together with cirrhosis of tissues in the fourth. This is accounted for by the fact that the worm lives on an average for 15 to 20 years, the whole time producing lesions. Repeated infection, which could account for the phenomena, is, in my opinion, a negligible factor.

The *incubation period* lasts from three to five weeks, beginning with a few skin symptoms of variable intensity, partly mechanical and partly due to an irritating substance secreted by the cercariæ during their penetration of the skin. This "Baoonah itch" is commonest in the month of June. It is generally described by the patients as a biting sensation rather than an ordinary itch. It occurs in parts exposed to the water, and is followed by the appearance of small red papules 2–5 mm. in diameter, slightly raised above the level of the skin. Papules and itch remain for two to seven days.

The itch is more frequent when the water is stagnant and two to four hours before noon.

First Stage.—I have seen only 3 per cent. of my patients in this stage. It lasts from three to six weeks, and covers the time between the appearance of the first toxæmic fever and the extrusion of ova in the stools.

The onset may be acute, though generally insidious. About four weeks after infection the patient feels persistent headache, malaise in the late afternoon, followed by general muscular pain most marked in the lumbar region and limbs. The fever is remittent, septic, or hectic in type (erroneously called the "urticarial fever"). In some cases there are wheals, acute nephritis and œdema of feet, legs, and scrotum, occasional abdominal pain, a sense of distension, and generally lowered mentality. The wheals are the most important physical sign in this stage. They last from 12–24 hours, but are succeeded by others for 7–8 days. Slight cases manifest no digestive disturbance except occasional constipation, but some have diarrhœa. The abdomen is slightly retracted with rigidity of the muscles of the upper right quarter. There is tenderness, most intense in the region of the gall-bladder. The liver and spleen are enlarged, without exception, since the first week, mostly only slightly, but sometimes markedly so.

The pulse is slow and the blood pressure is usually subnormal. Areas of transient decreased resonance may be observed over the bases of the lungs, due to local œdema. The urine is scanty, dark coloured, of high specific gravity, contains albumin and a large number of granular casts. The blood picture is characteristic; anæmia of chlorotic type, leucocytosis 10,000–20,000 with 30–70 per cent. eosinophilia.

Second Intestinal or Dysenteric Stage.—The cases seen in this stage comprise 58 per cent. of the total number of my series. It is characterised by the presence of the ova in the stools, but without papillomata. Its duration is from two and a half to three years.

The effect upon the nervous system is seen in continuous malaise, indisposition for exertion, weakness, drowsiness, pain in the back, sawing pain in the whole body, and especially in the bones. During the night the patient experiences a sense of fatigue, uneasiness, heat, and sometimes fever. Bronchitis may be the most important symptom, and is accompanied in a few by hæmoptysis.

The patients suffer from anorexia, thirst, and sometimes pain in the epigastrium occurring shortly after meals. However, the most characteristic feature of the disease is an intestinal disturbance which I term schistosomiasis exacerbation. This begins with increased secretion of mucus, abdominal pain, and colic, followed by diarrhœa and tenesmus, with passage of blood and mucus. Attacks occur every 15–20 days and continue for a day or two. The patient when relieved becomes severely constipated for some time, although straining may continue. During the exacerbations all the patient's complaints are aggravated. Proctalgia is present in some and rectal prolapse occurs in one-quarter of the patients. In girls puberty and menstruation may be delayed up to the age of 20–22. In married women the uterus is infantile and the patient is generally sterile. The patients rapidly lose flesh and strength, especially those complaning of much fever or diarrhœa. The fever is a mild remittent type. There is tenderness all over the abdomen, especially in the middle line, ½–2 inches below the xyphoid process, over the cæcum, pelvic colon, and sigmoid. The liver shows a slight enlargement. The spleen can also be felt; its size slowly increases. No papillomata are felt per rectum. With the sigmoidoscope the mucous membrane can be seen deeply congested, velvety, bleeding, rugose, and covered with dense mucus. One of the characteristics of the fæces in this stage is the presence of blood and mucus outside the greater part of the stool, remaining on the top of the mass. This is the typical bilharzial stool, and is intermittently passed as long as the worms are actively ovipositing within the intestinal coats. Blood is present in the fæces in 92 per cent., while mucus was seen in 85 per cent. of my cases. The pulse is regular though quick and compressible. The blood pressure is normal, and the heart-beat is generally normal in character and position. There is chlorotic anæmia, with an average hæmoglobin of 62 per cent. The number of white blood corpuscles may be increased or remain normal. Eosinophilia is generally between 20 and 30 per cent. There is a subacute nephritis, with urine generally scanty, dark coloured, and of high specific gravity. In a quarter of my cases it contained albumin without any bilharzia ova; and in 11 per cent. casts, generally granular.

Third Intestinal or Papillomatous Stage.—The cases seen in this stage comprise 32·5 per cent. of my series. It is a continuation of the second stage with nearly similar symptoms, differing firstly in the formation of papillomata, and secondly in amelioration of the general symptoms due to increased personal tolerance for the disease. The exacerbations still occur every 15 to 20 days, but diarrhœa is present only in 16 per cent. Tenesmus is present in half of the patients and straining in one-third. Rectal prolapse occurs in 36 per cent.

The condition of the bilharziasis victim in the third stage is no better than in the second. The temperature is always below 38° C.; in 75 per cent. it is between 37° and 38° C., with a few pyretic paroxysms showing

a milder state of toxæmia. Through the much-thinned and weakened abdominal wall thickening of the coats of the colon, particularly the sigmoid, is easily felt. The gut rolls under the fingers in characteristic fashion, and is felt as a solid structure 10 to 15 cm. long and 2 to 4 cm. in diameter. This is due to thickening of the intestinal wall, polypi, and pericolonic growths. The anus is relaxed and may prolapse alone or with a large part of the mucous membrane. A varying number of polypoidal tumours of different shapes and sizes are found as far as the finger can reach. They are fissured in all directions by the formation of secondary polypi. Bilharziasis of the sigmoid and rectum as seen by endoscopy takes various appearances, but the most constant feature is the presence of papillomata.

The pulse is rapid, compressible but regular, the heart is slightly dilated, and the blood picture varies with the acuteness of the condition. There is chlorotic anæmia with an average hæmoglobin of 67 per cent. There may be a distinct leucocytosis, but the number of leucocytes may be nearly normal. There is a slight eosinophilia which strongly contrasts with the marked eosinophilic reaction of the former stages. In the urine albumin is present without bilharzia ova in 13 per cent. and casts in 4·6 per cent. and lateral-spined ova in 2 per cent.

Fourth Intestinal or Stage of Repair.—The patients seen in this stage form 0·2 per cent. of my series. It is the terminal stage of the intestinal infection, characterised by marked fibrotic sclerosis and contraction of tissues, with only a few atrophied papillomata left. Symptoms are milder than in the previous stages and the patient approaches health. Dyspepsia is marked, but dysenteric exacerbations are fewer. Palpation may detect hard masses of thickened mesentery and omentum under the abdominal wall. The liver and spleen have contracted to nearly normal size, though hard and fibrous. The liver assumes the characteristic pipe-stem cirrhosis. In the rectum can be felt hard masses 2–3 cm. in diameter—fibrosed papillomata and scars.

Prognosis.—When properly treated the patients recover completely in the first and second stages; in the third stage the patient may be cured or remains with a certain amount of colitis. The fourth stage, though mild, is incurable. The only grave complication is severe anæmia and toxæmic dilatation of the heart; cases thus affected usually die suddenly within a short time (two to six months). Diarrhœa is very seldom if ever fatal. Rectal prolapse may be very distressing and may lead to exhaustion and death.

Treatment.—The patient is quickly benefited by the specific (tartar emetic) intravenous injection treatment in the first three stages, the fourth being very little affected. This treatment is contra-indicated when organic kidney or heart lesions are present and must be supplemented in the third stage by surgical treatment, such as excision of papillomata, resection of prolapsed mucous membrane, &c.

Hepatic Type—the Egyptian Splenomegaly.

This is a syndrome endemic in Egypt, widely distributed in all parts of the country, having many features in common with and closely resembling Katayama disease. It is accompanied by anæmia and certain other blood changes, febrile disturbances, definite hepatic and splenic enlargement, and at the end liver cirrhosis and ascites, but no characteristic intestinal lesions, though the case may not be an absolute but a relative case of uni-sexual bilharziasis.

The factors that produce the liver lesions are: Toxic substances produced by the worms; mechanical contact with the parasites causing endophlebitis and thrombosis in the portal system; pigment extruded by the parasites after their digestion of red blood corpuscles. Those producing the splenic lesions are toxins, as in Banti's disease; obstruction of many portal venules by hepatic inflammation and continual contraction of scar tissue; thrombosis of the portal or splenic vein; and pigment.

Proofs that the condition is toxic in origin:—

1. Enlargement of the liver shows that the mischief is toxic, the poisons reaching the liver cells in a more or less concentrated form.
2. All cases I have examined post mortem were found to contain male worms only, while during life no ova were passed. (The liver in this condition has been in the past examined by pathologists who failed to recognise the lesions as bilharzial owing to the absence or scarcity of the ova.)
3. Fairly observed in experimentally infected monkeys a diffuse cirrhosis in the portal spaces independent of the presence of ova in the tissues.
4. Kasama proved the occurrence of purely toxic lesions when he infected a rabbit with cercariæ of a single mollusc and provoked the usual changes, notably a cirrhosis, which could not here be accounted for by ova.

Incubation Period and Toxæmic Stage.—In these the symptoms are exactly similar to those in the intestinal type.

Second or Hepatomegalic Stage.—The symptoms are palpitation, vertigo, dyspnœa, and anorexia. The patient often induces vomiting to relieve the great discomfort felt after meals. He feels some pain over the spleen due to perisplenitis, and commonly a dragging pain in the left side caused by the huge size of the spleen.

Definite wasting and striking pallor are prominent, and there is an irregular fever of the septic remittent type. The abdomen assumes the shape of an inverted gourd. There is an outward expansion of the lower ribs, widening of the costal angle. There is tenderness over the hypochondrium on both sides. The spleen is obviously enlarged, hard, and often tender, generally reaching half-way or even right down to the umbilicus. The liver is generally uniformly enlarged, smooth, but of a firmer consistency than normal. One of the characteristics of this stage is to find the left lobe of the liver projecting beyond the costal arch and proportionally bigger than the right lobe, although there is hardly any anatomical difference in the degree of affection of the two lobes. There is a progressive anæmia of the chlorotic type and a leucopenia (average 4500) with relative lymphocytosis.

Third or Ascitic Stage.—The patients seen in this stage comprise 2 per cent. of my series. It is the terminal stage of uni-sexual bilharziasis mansoni as evidenced by marked fibrotic hardness and contraction in the form of cirrhosis of the liver, which becomes hard and shrinks within the costal margin. The spleen also becomes cirrhotic, but does not diminish much in size. The cirrhosis of the liver causes ascites and œdema with their attendant miseries.

The patient complains of lassitude, headache, giddiness, and dyspnœa; orthopnœa is generally absent in spite of the huge size of the ascites. He also complains of anorexia, chronic indigestion, hæmatemesis, which though not very common may be the first sign of cirrhosis and portal obstruction. In this stage the patient presents the familiar picture of cirrhotic ascites. He is weak, emaciated, his wasted limbs offering a striking contrast to the greatly swollen abdomen. The temperature is usually higher than normal, and with further progress of the disease the pyrexia increases. It is of the remittent septic type. The abdomen is distended to a great extent, assuming the characteristic form of an inverted gourd, though when the amount of fluid increases the abdomen becomes hemispherical. With the onset of the ascites the general symptoms become aggravated. The quantity of the fluid removed (3 to 5 litres) is generally less than in idiopathic cirrhosis, owing to the presence of inflammatory adhesions in the abdomen. It is pale yellow, clear, and contains albumin from 2–4 g. per litre. The number of cells rises sometimes to 16,000 per c.mm.

The liver is displaced upwards and to the right; adhesions may also prevent the descent of the spleen, and this, combined with the ascites, prevents the organ from being felt on abdominal palpation. Piles are present as in idiopathic cirrhosis. The pulse is always rapid, and the blood pressure low. The heart is displaced upwards and in some cases a functional murmur is heard. There is progressive anæmia of

the chlorotic type. The number of white cells varies very much, though leucopenia is the rule.

The thorax assumes a conical shape, due to atrophy of the muscles of the neck and shoulders and the widening of the lower edge of the ribs, in order to suit the distended abdomen.

Sometimes there is no evidence of kidney lesion in this stage; but albumin was found without bilharziasis of the bladder in 52 per cent. of my cases, of which 42 per cent. contain granular and hyaline casts. In cases of advanced ascites the quantity of urine may be much decreased and the specific gravity rises proportionally.

Treatment.—The first stage is completely cured by the proper administration of tartar emetic. If the hepatomegalic stage is early treated by tartar emetic intravenous injections it is completely cured, but later on, even though the patient be rid of his parasites, the liver and spleen condition may not be much improved. In such a case the spleen, if much enlarged and causing great discomfort, is better removed. In the ascitic stage no drug is of any avail, except tonics, especially iron. Tartar emetic is contra-indicated. Frequent tapping is permissible, but splenectomy is contra-indicated.

Prognosis.—The first and second stage are seldom fatal. When treated during the first stage they recover completely, but those in the hepatomegalic stage must content themselves with a general improvement. Although the liver and spleen never return to their normal condition the patient may live indefinitely. The ascitic stage is hopeless; the patient dies within a year from the onset of the ascites.

Clinical and Laboratory Notes.

SUBNORMAL CHILDREN.

THE EFFECT OF THREE MONTHS' RESIDENTIAL OPEN-AIR TREATMENT.

By Elizabeth Wyllie Miller, M.B. Glasg., D.P.H.,
ACTING ASSISTANT MEDICAL OFFICER OF HEALTH, HUDDERSFIELD.

It is well known that it is better, and more particularly that it is *easier*, to prevent disease than to cure it. The Education Authority of Huddersfield has established a system of giving three months' open-air residential treatment to a number of selected children. This has been going on annually between the months of October and March since 1923. A disused army hut with accommodation for 35 children at a time is used, and there is a playing field of several acres attached. The rooms are large and airy, and cross ventilation in them all ensures a constant stream of fresh air. Central heating, gas for cooking, and electric light are provided.

The Selection of Children.

Suitable children are selected by the school medical officer during the routine examinations, aided by school teachers, who bring forward special cases. An inquiry into family conditions, social circumstances, and environment of the child is made, and immediately before admission each is re-examined for infectious or contagious diseases. Should any child be verminous the condition is corrected before admission.

The children so selected fall into the following classes:—

(1) Anæmia.

(2) (*a*) Malnutrition. (*b*) Under weight as judged by a height and weight standard already established for Huddersfield school-children.

(3) Children of subnormal physical fitness in whom there is no definite sign of disease, and yet who constitute the majority of the school exclusion type. The muscle tone is poor, the posture bad, the shoulders round and drooping, and the chest flat. The child may be irritable and anxious-looking, or dull and listless; he is usually pale and has an almost complete lack of reserve force to combat disease, either infectious or otherwise—the so-called "pre-tubercular" child.

It is well to recognise that this state of affairs may result from lack of sufficient sleep; insufficient or improper food; insufficient exercise, or over-exertion; overstrain either at school or at home; or dark, airless, or dirty environment.

The Regimen and its Effects.

On admission each child receives an adequate supply of indoor and outdoor clothing which he or she is allowed to keep on discharge so as to ensure that no child shall suffer from a sudden change of garments. A liberal supply of plain, wholesome, well-cooked and palatable food is allowed for each child, so that besides increased intake there is increased absorption. The diet is well balanced and contains all the essential food factors. Each child rests for an hour after the midday meal in a darkened dormitory, and spends 12 hours in bed every night.

A school-teacher attends daily (Saturdays and Sundays excepted) from 9.30 A.M. to 4.30 P.M., but the usual educational curriculum gives place for the most part to the greater need for exercises and games in the open air. The effect of this is an increase in the development of the whole body, and an improvement in muscle tone. Movements become better coördinated. A valuable feature is the education of the child in hygiene. He or she is taught the value of cleanliness, proper mastication of the food with the proper type and amount necessary for health; and, above all, the value of fresh air.

TABLE I.

	Boys.	Girls.
Average gain in weight in *three months* of children in open-air home, 1923–28 ..	4·535 lb.	5·346 lb.
Average *yearly* gain in weight of all children of same ages examined in Huddersfield, 1923–28	5·009 lb.	5·864 lb.
Average gain in height of children in *three months* in open-air home, 1923–28	0·7456 in.	0·897 in.
Average *yearly* gain in height of all children of same ages examined in Huddersfield, 1923–28	1·882 in.	2·348 in.
Average gain in chest measurement in *three months* of children in open-air home	0·423 in.	0·412 in.

The average increase in height and weight of the boys so treated *for three months* is 0·7456 in. and 4·535 lb., as compared with the average *yearly* increase in height and weight of 1·882 in. and 5·009 lb. for all boys of same ages examined in Huddersfield 1923–28, and the average increase in height and weight in three months for girls so treated is 0·897 in. and 5·346 lb., as compared with an average yearly increase of height and weight of 2·348 in. and 5·864 lb. for all girls of same ages examined in Huddersfield, 1923–28.[1]

The average gain in chest measurement in three months for boys in the open-air school is 0·423 in. and for girls 0·412. (Figures are not available for the comparison with all children of same ages in Huddersfield.)

TABLE II.

	Boys.	Girls.
Average deficiency in number of red cells per c.mm. of blood on admission ..	961,623	1,042,121
Average gain in number of red cells per c.mm. of blood	244,824	458,916
Average deficiency in number of red cells per c.mm. blood on discharge	716,799	583,205
Average deficiency in percentage hæmoglobin on admission	11·654 %	14·234 %
Average gain in percentage hæmoglobin..	7·05 %	8·679 %
Average deficiency in percentage hæmoglobin on discharge	4·604 %	5·555 %

The average deficiency per boy in the number of red blood corpuscles per cubic millimetre of blood on admission was 961,623 and on discharge 716,799, thus showing a gain of 244,824 per c.mm. and for girls on admission the average deficiency was 1,042,121 and on discharge 583,205, thus showing a gain of

[1] These children cannot be expected to increase in height and weight at the same rate for a period of a year as they did for the three months. The comparison is with an average of all children of same ages in Huddersfield whether physically fit or otherwise.

458,916 red blood corpuscles per c.mm. of blood.[2] The average deficiency in percentage of hæmoglobin on admission was 11·654 per cent. for boys and on discharge 4·604 per cent., thus gaining 7·05 per cent. in the three months, and for the girls the average deficiency in percentage of hæmoglobin on admission was 14·234 per cent. and on discharge 5·555 per cent., thus showing a gain of 8·679 per cent.

These figures show a marked and very satisfactory improvement in the general nutrition and the condition of the blood, and show how quickly this type of child can be brought to nearly a normal state of health. In addition to the improvement as shown by the above figures children were better mentally and physically in every way, and teachers noticed that on their return to school their standard of intelligence was considerably increased. Instead of anxious and dull faces we have bright, smiling, alert countenances. They are more vivacious and happy, seeming to have a brighter outlook on life.

The scheme undoubtedly justifies itself in its beneficial results. The cost is inconsiderable, and there is every reason to believe that it will be more than recouped in the reduced cost of treatment of actual disease in the future. Meanwhile those who actually observe the youngsters under the regimen of the home are more—far more—than satisfied with the results.

In conclusion, I wish to thank Dr. S. G. Moore, medical officer of health for Huddersfield, for his kind assistance in allowing me to have access to his records and assistance in preparing this paper.

THE USE OF OX BONE PLATES AND SCREWS IN THE TREATMENT OF FRACTURES BY OPEN OPERATION.

BY HAMILTON BAILEY, F.R.C.S. ENG.,
SURGEON TO THE DUDLEY-ROAD HOSPITAL, BIRMINGHAM.

METAL plates fixed by metal screws into living bone have proved to be unsatisfactory, because the metal, being a completely unphysiological substance, causes rarefaction of the bone. It is true that if the metal plate is removed as soon as union of the fracture has occurred these baneful effects are reduced to vanishing-point. Nevertheless, the removal of the plate necessitates a second anæsthetic, and there is a second wound to heal.

Plates and screws made of ox bone, which were introduced by Cunningham,[3] are assuredly much more physiological (Figs. 1 and 2). Once in place, they can be left alone; the plate and the screws are very gradually absorbed.

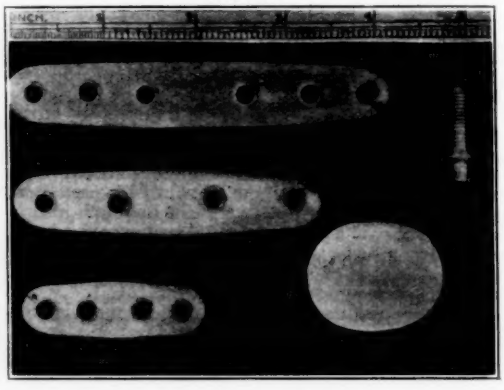
This note is based upon a series, occurring during the past four years, of 39 cases in which ox bone plates and screws were used. They were distributed as follows:—

Femur	13	Spine (bolting together of lumbar spinous processes)	1
Tibia	13	Separated epiphysis (bone screw)	3
Ulna	4		
Radius	2		
Humerus	2		
Skull (defect after trephining)	1		

The technique of inserting these plates is a little more complicated than that of inserting metal plates. It consists essentially of the following steps: (1) drilling the bone; (2) tapping the drill holes; (3) inserting the screws; and (4) nipping off the projecting handles of the screws. Certain technical difficulties have been encountered.

(*a*) *The thread of the tapped bone breaks.*—This is very provoking, and when it occurs, as the screws are of standard size, that particular hole is useless. Breaking of the thread is liable to occur in two stages of the operation. First, as the extremity of the tap enters the medullary cavity. This can be prevented by abstaining from any excessive downward pressure during the insertion of the tap. Secondly, a more fruitful source of this accident is in the endeavour to release the brace from the screw after the screw has been inserted. I found this such a constant source of trouble that I have given up using the brace, and have devised a pair of screw-driving forceps which can be released instantly (Fig. 3).

FIG. 1.



Ox bone plates, screw and disc of bone used for repair of trephine holes of skull.

FIG. 2.

A bone plate used in the operative treatment of a fractured humerus.

(*b*) *Breaking of the bone screw.*—I have had no trouble worth mentioning on this score, but a number of surgeons who are using ox bone plates complain that this is their chief difficulty. The fault, I am sure, lies not in the screws but with the tap. As a tool the tap of stainless steel supplied by surgical instrument makers is not to be compared with the Whitworth tap used in the metal trade. I find the most satisfactory method is to purchase a 3/16ths Whitworth

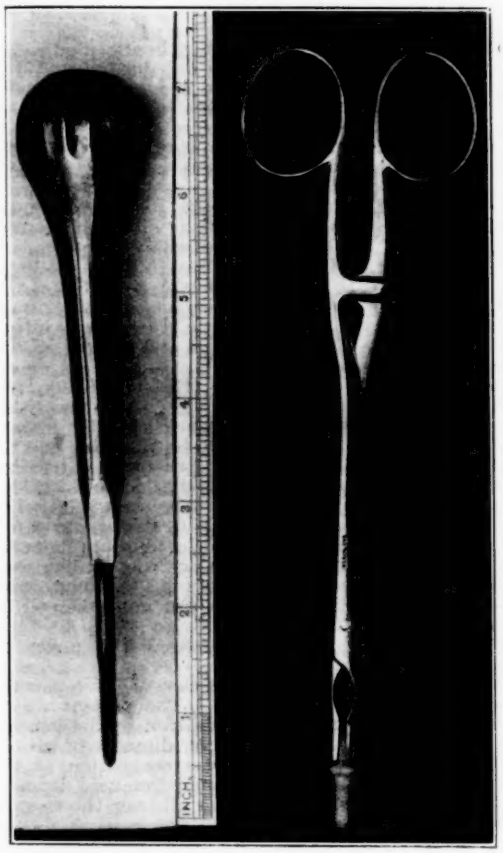
[2] A scientific mean of the red blood corpuscle content of human blood for both sexes at age-periods for different races and seasons is not established. For the purpose of this paper (and for similar examinations elsewhere) I have taken 5,500,000 per c.mm. as an average. For comparison only the method seems to be permissible.

[3] Cunningham, W.: Wisconsin Med. Jour., 1924, xxiii., No. 5.

tap from an ironmonger and have it riveted into a metal handle. Fig. 3 shows an instrument assembled in this way. Every six months the tap is changed because repeated boiling dulls its cutting edge. A hole properly tapped will take its screw without force, and we know that it is "home" when the screw-driving forceps free wheel around the projecting handle of the bone screw. Bone screws, unlike metal screws, are driven with a light hand, for the necessary path has been cut already by the tap.

(*c*) *Fracture of the plate* has occurred twice in my series—once as the limb was being put into a Thomas's splint at the close of the operation, and once in the fourth week after operation, whilst the leg was being massaged. The first case is instructive, because it serves to remind us how necessary it is to support the limb fully during the application of the splint. After a tiring operation there is a tendency, as soon as the last stitch has been inserted, to leave this important step in the hands of others. Nevertheless, I believe that both these fractured plates were largely due to oversterilisation in their preparation. The plates and screws should not be placed in an autoclave, but boiled for 20 minutes on three successive days, and then stored in alcohol until required for use. Sterilised in this way, they should, with ordinary care, withstand the strain which they have to bear.

FIG. 3.



The instrument on the left is a tap for use after the hole has been drilled in the bone. That on the right is a forceps-screwdriver holding a bone screw.

Perfect first-intention healing of the wound has occurred in all but two cases. In one case a sinus developed over the only metal screw which was used in the series. The use of the metal screw became necessary owing to the breaking of the thread of the tap in two consecutive holes—a difficulty which has already been alluded to, and which, I believe, is now finally overcome. The sinus quickly healed on removing the screw. In the second case (a complicated malunited fracture of the upper end of the femur, in which resection of a portion of the bone was necessary) a hæmatoma developed, which became infected. This discharged for a month, and then, fortunately, healed spontaneously, and at the present time (two years after the operation) there is excellent union of the femur and the wound.

In all cases the wounds have been closed by silkworm-gut sutures only. No buried sutures of any kind were used. The stitches were removed on the tenth day under personal supervision in the operating theatre.

For the femur I have used A. K. Henry's[4] method of exposure, which is a great improvement on the older methods. For the tibia a large external flap offers many advantages, and I am convinced that whenever possible the plate should not be placed upon the subcutaneous surface of the bone, but upon the external surface, where it can lie snugly concealed by the muscles of the anterior tibio-fibula compartment.

A FATAL CASE OF INFLUENZAL SEPTICÆMIA.

BY ANNE E. SOMERFORD, M.D. MANCH., D.P.H. CAMB.,

PATHOLOGIST TO THE ROYAL MANCHESTER CHILDREN'S HOSPITAL, PENDLEBURY.

OWING to the rapid termination of the illness, and the fewness of the clinical and post-mortem findings, the following case seemed to be worthy of publication.

A well-nourished boy of two and a half years of age, with a history of diarrhœa and vomiting on the previous day, was seen at the out-patient department of the Royal Manchester Children's Hospital on March 22nd. The child appeared to be so gravely ill that he was admitted to hospital without delay. On examination a dusky purple discoloration (not a true cyanosis) of the skin was observed. The temperature was 102° F., the pulse-rate uncountable, and the respiration-rate 80. There were a few scattered râles over both lungs, but otherwise the clinical findings were negative. He had several slight convulsions, and died within an hour of admission to hospital. A post-mortem examination was made within 24 hours of death, but no lesion of any of the organs could be found. A culture was made from the blood within the liver, and this gave a good growth of Pfeiffer's bacillus of influenza, and a few colonies of *Staphylococcus albus*. Death was therefore due to a septicæmia of influenzal origin.

I have to thank Dr. J. F. Ward, at whose suggestion the culture was made, for his kind permission to publish the clinical notes.

[4] Henry, A. K.: Exposure of Long Bones. Bristol: John Wright. 1927.

A NEW MATERNITY HOSPITAL.—On Tuesday the Prime Minister opened the Lucy Baldwin Maternity Hospital at Stourport, Worcestershire, which has been erected as a model maternity unit for rural areas. The building, which stands high and overlooks the Severn Valley, consists of a main block and an isolation block. In addition to a ward of eight beds there is a private ward.

EDINBURGH HOSPITAL FOR CRIPPLED CHILDREN.—Two years ago it was decided to build an Edinburgh hospital for the treatment of cripples. A sum of £75,000 was asked for. At a meeting held recently in the City Chambers the Lord Provost reported that £50,000 has already been raised to this end, and that a site has been secured at Fairmilehead. The hospital is to provide not only for Edinburgh, but for the whole south-eastern area of Scotland and for the counties of Kinross and Clackmannan and the western half of Fife.

Medical Societies.

OPHTHALMOLOGICAL SOCIETY OF THE UNITED KINGDOM.

ANNUAL CONGRESS.

THE annual congress of this Society was held in London from April 11th to 13th under the presidency of Mr. CHARLES HOWARD USHER. The first contribution was a paper on

Formative Fibrous Tissue Reaction in the Eye,

by Mr. E. TREACHER COLLINS. His purpose, he said, was to describe the form of reaction in the tissues of the eye which resulted in a new formation of fibrous tissue. He classified as follows the conditions giving rise to this reaction: (1) Encapsulating fibrosis. The first of the conditions under this head was in connexion with foreign bodies; the second in connexion with neoplasms, the third in connexion with parasitic cysts. (2) Post-fibrinous fibrosis in connexion with blood-clots. (3) Reparative fibrosis: (*a*) in connexion with developmental defects; (*b*) in the healing of wounds; (*c*) as a sequel of granulomatous inflammation.

In order to explain the conditions observed, Mr. Collins formulated the following general propositions: (1) That a formative fibrous tissue reaction was one of the means which the tissues of the body used for counteracting deleterious influences in their environment. (2) That such a formative fibrous tissue reaction might be excited, apart from any exudation of leucocytes, though at times associated with it. (3) That an aseptic foreign substance implanted in the body, exciting no exudation of leucocytes, might give rise to a formation of fibrous tissue which encapsuled and fixed it. (4) That all neoplasms when they came into contact with tissue of mesoblastic origin excited a formative fibrous tissue reaction, this tending to check their extension into surrounding parts. With slowly growing neoplasms it succeeded in encapsulating the new growth. With rapidly growing neoplasms the cell proliferation outpaced the formative fibrous tissue reaction, and the growth took on malignant characteristics. (5) That any remedial treatment of neoplasms should aim not only at checking the proliferative activity of the cells composing it, but also at promoting the formative fibrous tissue reaction. (6) That parasitic cysts coming into contact with tissue of mesoblastic origin excited a formative fibrous tissue reaction, an encapsulement in a fibrous tissue covering. (7) That coagulated blood in some situations in the body might act like a foreign substance and excite a formative fibrous tissue reaction. (8) That a formative fibrous tissue reaction might be excited in the repair of lesions in the tissues of the body, due to either defective development, traumatism, or a destructive inflammation. (9) That the new formation of fibrous tissue in the conjunctiva in trachoma was a secondary and reparative process which persisted, tending to replace the fibro-adenoid layer which was destroyed. (10) That the new formation of fibrous tissue in the conjunctiva in spring catarrh was a secondary reaction excited by the proliferation and downgrowth of the epithelium, and that it entirely disappeared when the disease came to an end.

Mr. F. A. WILLIAMSON-NOBLE read a paper on

Graded Squint Operations

in which he described his procedures for advancement of muscle according to the result of measurements. A point to remember was that if a convergent squint had lasted some time the external rectus became atrophic. He had been satisfied with the results of recession, or recession combined with tenectomy; he had not operated upon the external rectus alone. For measuring the angle of deviation he used the Maddox tangent scale or the Priestley Smith tape; but a better method was with the Maddox rod and prisms, graduated according to their angle of deviation. Mr. Williamson-Noble did the operation under general anæsthesia, as it was better for the patient and allowed of greater deliberation on the part of the operator. Of 16 cases which he had traced all but two were successful, and one of the failures could scarcely be called such, as she had 45° convergent squint before the operation, and it was reduced to one of 28°. The real failure was due to under-estimating the effect of Wilkinson's resection advancement.

Mr. M. L. HEPBURN read a paper on

Some Unsolved Problems in Connexion with Diseases of the Choroid.

His first contention was that primary pigmentary degeneration of the retina was not due, as had been contended by Treacher Collins and others, to nerve degeneration (known as the abiotrophy theory), but to defects in the choroidal circulation. The next problem he attacked was that of the reason for the variations in the visual field defects found as a result of inflammatory deposits and scars in the choroid. He considered that main arteries supplying definite regions were isolated, and that an inflammatory deposit might block one of these main channels, and so produce the sector-shaped defect in the visual field. Next he dealt with the question why some diseases of the choroid terminated in secondary optic atrophy accompanied by a diminution in size of the retinal vessels, while in others, although the greater part of the choroid was involved, the disc and retinal vessels remained normal throughout. His impression was that vascular diseases of the choroid were more likely to end in optic atrophy than were the inflammatory forms. A further question which he discussed was the significance of the variations in amount and distribution of pigment in diseases of the choroid, and whether the appearance of this pigment bore any relation to diagnosis and prognosis. He thought it could safely be said that when pigment appeared away from its normal situation, in most cases one was dealing with a disease of the choroid, probably of inflammatory or vascular origin. Prognosis was not much helped by these appearances.

Mr. TREACHER COLLINS discussed the paper at length.

Mr. CLARK SOUTER reported a case of Uveo-parotid Fever, with Autopsy Findings. The patient was a man 40 years of age, and in addition to the general physical signs he had cycloplegia, dimness of vision, and facial paralysis. There was congestion of the conjunctiva and ciliary region, and permanent deposits of keratitis punctata were found all over the cornea. The latter persisted to the end.

Thursday afternoon was devoted to a debate on

HETEROPHORIA.

Dr. E. E. MADDOX (Bournemouth) said that orthophoria, from which heterophoria was a departure, could be defined as "a tendency for the eyes to set themselves truly for the object of fixation." Heterophoria could well be compared to the slackness in the steering-gear of an old motor-car, which in moderate degree was of no consequence, but in larger amount made too great a demand on the subconscious attention of the driver. It was a corresponding tax on attention which gave to heterophoria its importance. Concentration of attention implied active inhibition of every conflicting neuron, Sherrington's "reciprocal innervation" in the motor sphere finding its counterpart in the psychic. The discomfort arising from heterophoria was apt to hover about the occipital region, whereas that of refractive errors was felt at the back of the eyes, in the temple, and the brow. Sometimes a wandering eye suppressed its vision instantaneously, so that no diplopia appeared; but, even so, the suppression made no difference to the effect of the wandering on the aim of the other eye. In one well-marked case, good binocular vision was

enjoyed until the object came within two or three feet; then the right eye instantaneously suspended its vision and deviated without diplopia. There were 12 species of paretic heterophoria and 12 comitant. The measurement for the paretic was on the same principles as for frank paralysis. It was important to keep the disc of rods perpendicular to the line between the eye and the light; therefore he had strung one on a kind of gallows, so that it might remain quite vertical, however much askew the head might be placed. The comitant heterophorias were due, he said, to slackness of one of the higher conjugate innervations. Exophoria for distance was, nearly always, due to either subsidence of muscle tone or to convergence deficit. It was very rarely due to divergence excess. Division of the restiform body was said to cause conjugate version of the eyes to the opposite side, combined with elevation of one and depression of the other, confirming the see-saw innervations which the speaker had described in a case. Cyclophoria, if constant, was due to relative inaction of either incyclovergence (in which the two upper poles of the eyeballs approached one another) or excyclovergence (in which they separated). Dr. Verhoeff (of Boston) did not believe in cyclophoria, stating that the fusion of skew images with one another was effected by psychical means only. That was true, Dr. Maddox believed, within certain limits, but many tests showed that the eyeballs could rotate about their visual lines. He would like to see a case in which, in nystagmus, the eyeballs cycloverged in and out, as that would afford a further confirmation of the innervations he was referring to. The version phorias were less easily measured. Dextrophoria and lævophoria were due to imbalance of two innervations; in these conditions there was a tendency for the eyes to look parallel-wise to the right or to the left when at rest. Anaphoria and cataphoria meant a tendency for both eyes to look upwards or downwards, and were due to imbalance of the innervations he called surversion and deorversion. Students were often perplexed as between the terms "duction," "version," and "vergence." Whenever an eye was thought of monocularly one could speak of duction; it meant that an eye was led by its muscles, and the mind did not travel beyond the orbit. Version was a conjugate parallel motion of the eyes effected by conjugate innervations. Vergences were contrary reciprocal motions effected by conjugate innervations. Hence when measuring the amplitude of fusion by prisms it was better to speak of prism vergence tests than of duction tests.

Dr. Maddox then spoke of the tests for heterophoria. Since no refraction was complete without testing for heterophoria, it was desirable to have a speedy method to single out cases requiring more accurate measurement. It was convenient, he found, to have a hand trial frame which could be held in front of the ordinary trial frame, the former having rods on one side and a rotating prism or pair of prisms on the other. The prism could be rotated after telling the patient to say "snap" when the red streak and the light met. For accurate measurement a tangent scale was best, and if there was any suspicion that fusion was not completely suspended, one eye could be screened and then suddenly exposed to see where the streak appeared at the first moment of exposure. The wing-test he regarded as better, as it did away with the prism and ensured accommodation at the required distance.

Exophoria, by the wing test, was generally of trivial account, but esophoria called for a spherical correction which reduced it to nil. To give a weak prism for a large exophoria was often of great value, as it was the last degree of stretch of the fusion reflex which was most fatiguing. An approximate rule was, lenses for exophoria, prisms for exophoria.

Treatment.

It was impossible, said Dr. Maddox, to make rigid rules for the treatment of the condition, as it was a symptom not a disease. The person must be treated, not the phenomenon. Most minor heterophorias did not need treatment, though exceptions could be admitted in the cases of aviators, sportsmen, and others, as it might have importance when the nervous system was tired. The counsel of perfection was to ascertain the cause and, if possible, remove it. Errors of refraction were by far the most common cause, but septic foci in nose, teeth or tonsils, lack of fresh air and exercise, and anæmia could not be left out of account. If refraction treatment failed, the choice lay between exercises or relieving prisms. The former were more suitable for the young, prisms for the old. Any neurasthenia should be treated first. The effective value of a prism was less at reading distance than for a far object. Also, one must make sure that the hyperphoria was not an after-effect of wearing spectacles askew. If present only with the spectacles on, the fault lay with the glasses; if vice versa, the fault which had been in the spectacles was transferred to the eyes. Or the patient might have skewed his spectacles to correct it. For esophoria, prisms were less useful than lenses; the latter were curative. In exophoria, constitutional treatment was more often needed than in the other varieties; it was also the most suitable for training, especially where there was subconvergence. Weak prisms were often helpful; strong ones caused metamorphopsia, robbing the accommodation of the support it was accustomed to receive from convergence. Operations were very suitable in selected cases of heterophoria; in neurotic people there effect was not permanent.

Mr. CHARLES GOULDEN followed. He first described his routine examination of the muscle balance of patients who came with apparent or real refractive errors. Such an examination was obviously necessary. It was important to be certain of the type of deviation—i.e., whether it was concomitant or paralytic. The most important heterophoria was hyperphoria, a want of muscle balance between the eyes in the vertical direction; this form caused most inconvenience, because one had little power over the vertical deviation of the eye. Only when a vertical deviation caused symptoms should it be treated. Among the symptoms were persistent headache, often occipital, confusion of print, sometimes a complaint that lower lines of print surmounted upper lines. The treatment consisted in the use of prisms. If a low degree prism was necessary, this should be placed with the base down before the eye which tended to deviate upwards. If the prism needed was 2°, or more, it should be equally divided between the two eyes—i.e., one prism base down before the upward turning eye, the other base upwards before the downward turning eye. When of high degree, hyperphoria might call for operation; then advancement of either superior or inferior rectus should be done. He referred to four cases he had seen of torticollis due to hyperphoria. There were patients who, immediately the examination was commenced, had a spasm of convergence; these cases were probably hysterical in origin, and needed a careful correction of refraction, probably under atropine, and then such treatment as the hysteria might call for. He had neither operated nor supplied prisms for this condition. In cases which resisted treatment by exercise, especially those in whom an exophoria became a squint—i.e., when the patient was fatigued—operation might be necessary. Here tenotomy was not usually regarded as sufficient, there must be advancement of an internal rectus muscle.

Group-Captain E. C. CLEMENTS (R.A.F.) spoke of his experience in connexion with flying men, pointing out that in the case of an aeroplane in space, the strains and stresses differed from those in people on the ground. He analysed the results of spinning in the Barani chair 10 times in 20 seconds in the case of 118 men. Almost all flying men had good vision. He believed that a big percentage of cases of torticollis would be found to be suffering from hyperphoria.

Mr. ERNEST CLARKE did not think it was fair to take as normal the kind of case met with in the Air Force. In the ordinary population he regarded hyperphoria as very common indeed, but as it was usually of a minute degree, it was not important. For many years he had advocated the correction of low errors of refraction. When minus glasses were necessary there might be a small exophoria. The latter always lowered the amplitude of convergence, and when exophoria was present the fusion supplement required was always bigger, whereas it was for the ophthalmic surgeon to make the fusion supplement as low as possible. When low refractive errors were corrected, the hyperphoria usually disappeared in a short time. One should not be content with a single test. He objected to the use of prisms for young or middle-aged people; to supply these at this stage was a confession of weakness, and the strength had to be progressively increased.

Mr. H. B. GRIMSDALE spoke of the people occasionally seen who were greatly helped by a 0·25 cylinder and by a 1 prism. Could rules be laid down, he asked, for dealing with the condition? Probably not. For exophoria he usually advised exercises. He did not think the rôle of hyperphoria in the production of strabismus had been given sufficient attention. Cyclophoria rarely gave trouble.

Mr. HUMPHREY NEAME agreed that in hyperphoria, to relieve the discomfort, the smallest possible prism should be used.

Mr. HARRISON BUTLER said that often, when ordering prisms for elderly people with convergence insufficiency, the relief afforded tended to allow the muscles to repair, after which the prism could be discarded.

Mr. WILLIAMSON-NOBLE described this method of testing for cyclophoria by means of tilted mirrors.

After further discussion the openers replied.

On Friday morning Mr. W. S. DUKE-ELDER contributed a paper, illustrated by the epidiascope, on the

Nature of the Vitreous.

He said the vitreous was ordinarily conceived of as made up of a framework of fibres forming a close network, in the meshes of which was a fluid, the whole being kept in by a hyaloid membrane which surrounded the vitreous body. The fibrillar framework could be seen with the slit-lamp, though this could only show the optical appearances, the result of the heterogeneity of the tissues through which the light passed. The slit-lamp findings must be elucidated by an unequivocal source, and this was supplied by the ultra-microscope, which was first utilised in this study in 1923. Its magnifications showed the individual molecules, and no fixative was needed. The vitreous was found to be a pure homogeneous gel—i.e., of the consistency of gelatin. In a gel the water became absorbed by or combined with the colloid molecules; it had a high viscosity. On the surface of the vitreous were forces which aggregated together the micelle in close formation. In most cases the chemical composition of the vitreous was the same as that of the aqueous in regard to nitrogen and salt content; but in addition there was present a muco-protein to keep it transparent, and a kerato-protein to keep it gelable. Vitreous was derived largely from the ectoderm in the vitreous cavity. If the gel swelled glaucoma should occur; if it shrank there would be a tendency to retinal detachment. The sclerotic swelled in both alkaline and acid solutions, largely owing to its contained collogen. If the sclerotic swelled the volume of the eye was much diminished and the eye pressure rose enormously.

Sir JOHN PARSONS expressed high praise for this piece of research.

Among other papers at this sitting was one by Mr. EUGENE WOLFF on the

Pathology of Orbital Hæmorrhage and Inflammation.

Hæmorrhage into the orbit, he said, took a longer time to absorb than did bleeding into most other parts of the body, usually held to be because the orbital fat was relatively poorly supplied with blood-vessels. There was, however, another side to the question which had not received much attention. Clinically absorption of hæmorrhage was accompanied by swelling, but in the orbit the contents could only expand anteriorly, resulting in a pushing of the eye forward, thus manifesting itself as a proptosis. When the muscles of the eye had yielded to the full extent of their elasticity the orbit could be regarded as a closed space, and the œdema following absorption of hæmorrhage would cause venous obstruction, and, later, increased transudate. This would explain why orbital inflammation cleared up after a simple incision into orbital tissues without evacuation of pus. The rapid onset of blindness in many cases of orbital cellulitis was probably due to pressure exerted on the optic nerve or on its blood-supply. The indication in these cases therefore seemed to be to relieve the tension in the orbit, while doing a minimal injury to important structures. This thesis Mr. Wolff elaborated and quoted cases.

Mr. MAURICE WHITING read a paper on

Optic Atrophy following Hæmorrhage from the Alimentary Tract.

He said that Harbridge found that 240 cases of the kind had been reported up to 1924. The present contribution consisted of records of three cases which had come under Mr. Whiting's own notice, and two others for which he was indebted to Mr. Hepburn and Mr. Doyne. The following could be taken as illustrative of them all.

A man, aged 40, was admitted to hospital in a semi-comatose condition. He had had abdominal pain, had two fits, and was very confused mentally. On admission he was very pale, the mucous membranes were blanched, and there was some jaundice. Soon after admission he passed two hard, black motions, but at the time the man was not thought to have melæna. Next day the motion showed a trace of blood. On August 14th the hæmoglobin index was 0·6, the red cells 15 per cent.; on the 30th the red cells were 19 per cent., and a month later the figure was 43 per cent. Both discs were pale and blurred, and there were small scattered patches of exudate round the discs. On Sept. 4th there was no perception of light in either eye.

The condition, said Mr. Whiting, might follow hæmorrhage from any source, but it was most commonly a sequel of bleeding in the alimentary tract or from the uterus. Many cases had occurred after childbirth or miscarriage, and only rarely after traumatic hæmorrhage. He did not believe the first ocular state was an optic neuritis; it was probably due, in his view, to sudden death of the nerve fibres.

Friday evening was devoted to a discussion on the

Diagnosis and Treatment of Ocular Tuberculosis.

Sir ARNOLD LAWSON, in opening, said the differential diagnosis of tubercle in the eye might be said to rest on one or more of the following considerations: The presence of active tuberculosis elsewhere. In the eye tuberculosis was essentially a surgical rather than a medical condition. Ocular tuberculosis, as an accompaniment of phthisis, was very uncommon. Up to, and even after puberty, bovine, as opposed to human, tuberculosis was very common. Bovine tubercle needed a bovine test, as a negation of human tuberculosis did not exclude the bovine form. The possibility of mixed infection should never be forgotten; there was no reason against active tubercle coexisting with active mixed infection. In ocular tubercle there was an absence of subjective symptoms comparatively with objective signs. These cases were insidious in onset, destructive in character, slowly progressive, and intractable; there was a notable absence of severe pain. He opposed the use of

Calmette's local conjunctival test as being too dangerous. Tuberculous affections of the eye might be either extra-ocular or intra-ocular, the first of these being so-called primary or secondary. He doubted, however, whether tubercle, even of the conjunctiva, could ever be primary; it was certainly difficult to infect the conjunctiva unless a local abrasion was present. Intra-ocular tubercle was always a secondary infection; it might occur in any part of the uveal tract. The most common tuberculous inflammation of the eye was irido-cyclitis. Perhaps choroidal tubercle could not be diagnosed clinically at first sight. Tuberculous masses sometimes reached a great size without causing much trouble. They might disappear under the use of tuberculin. Treatment of ocular tuberculosis must be considered from the general and the local points of view, the former especially in the case of children with phlyctenular disease. In a large number of these benefit could not be expected until superabundant adenoids and enlarged tonsils had been removed. Of a series of 42 cases treated with tuberculin only 10 per cent. showed no improvement; in 45 per cent. healing followed its use. As, however, it might be a dangerous remedy, it should not be used unless it was quite clear that the case was suitable. Probably the value of bovine tuberculin was not yet fully appreciated. Much good had followed phototherapy for these cases, and he was able to endorse Mr. Duke-Elder's findings in this respect in the cases of children with phlyctenular disease. Sir Arnold had not found it of equal value for adults. This treatment should not be regarded as a substitute for, but rather as a supplement to, other methods. The question of the value of local ultra-violet rays was still sub judice.

Dr. R. A. YOUNG read a paper on the general systemic aspect of the disease. He said that if medical tuberculosis coexisted with the ocular condition the treatment of the latter must wait on the former. He was cautious in his treatment by tuberculin, using it in his lung cases only when the pulmonary lesions were stabilised and were not causing general symptoms. In the active stage of the disease both tuberculin and artificial sunlight could do harm.

Mr. S. H. BROWNING spoke on the subject first from the pathological aspect. As to treatment, he said he had been using bovine and human tuberculin for the eye for 15 years.

Mr. A. L. WHITEHEAD emphasised the importance of a thorough search of the whole body for tuberculous lesions when that disease in the eye was suspected. Many of the cases of vitreous hæmorrhage seen in which the cause was not very obvious he suspected of being tuberculous. He was a great believer in tuberculin, which should be begun very gradually.

Mr. DUKE-ELDER said he regarded phototherapy as merely an adjunct to ordinary treatment. It was extremely good in phlyctenular disease and other tuberculous diseases of the eye. In 33 cases at Moorfields in which the treatment was employed, the average period of treatment before phototherapy was adopted was two and a half years (75 per cent. had tuberculin injections also). In the period after the introduction of phototherapy 85 per cent. had a quiet eye after an average of five months' treatment; 6 per cent. were very much improved. In 9 per cent. the disease was still active at the end of that time, though there were hopes of much improvement.

Dr. G. MACKAY and Mr. M. S. MAYOU also took part in the discussion, and Sir ARNOLD LAWSON replied.

On Saturday morning Mr. BERNARD CRIDLAND opened a discussion on the

Prevention of Minor Eye Injuries in Industry.

He first spoke of the Departmental Committee on the subject in 1922, which gave an excellent survey of the whole question of accidents in industry. Four surgeons had supplied careful notes of eye injuries sustained in the course of occupations in 426 cases, the four being Mr. J. Evans (Birmingham), Mr. A. J. Ballantyne (Glasgow), Mr. R. J. Coulter (Newport, Mon.), and Mr. Cridland. The cases were divided into three main groups: (*a*) Occupations involving exposure to small flying particles, such as workers at grindstones or emery wheels. 51 per cent. of the cases were in this group. Risk of serious injury here was small, the trouble being mainly a foreign body in the cornea. (*b*) Occupations involving exposure to flying chips of metal, 26 per cent. of all. (*c*) Miscellaneous, including such occupations as mining, road-making and repairing, painting, plastering, general labouring, 23 per cent. In 70 per cent. of eye accident cases no form of protection to the eye was available—a fault of employers. In 19 per cent. protection was admitted to be available, but was not used. In the remaining 11 per cent. goggles or machine guards were used, therefore accident seemed to prove them inefficient. After pointing out the economical loss of failure to adopt measures of protection, Mr. Cridland said there were three main lines of prevention—namely, those based upon (1) mechanical guarding; (2) education on the subject of workmen and foremen; (3) engineering revision. Good goggles, he said, gave 100 per cent. protection, shields 90 per cent. protection. The great obstacle to success in all these efforts was the objection of the worker to the wearing of goggles, many regarding them as effeminate.

Mr. J. H. FISHER pointed out that the Council of British Ophthalmologists had been actively interested in the same subject. Mr. TREACHER COLLINS thought a visor on the lines devised by Sir Richard Cruise for war purposes, with a very fine mesh, might be used; it would be better ventilated than glass goggles. Mr. JOHN ROWAN, Mr. CYRIL WALKER, Mr. J. F. CUNNINGHAM, Mr. M. HINE, Dr. G. MACKAY, and Mr. A. L. WHITEHEAD also discussed the subject, and Sir JOHN PARSONS pointed out that American employers in engineering shops took a stronger line than British employers in insisting on workmen using adequate protection.

On Friday afternoon clinical cases were inspected and discussed at the new premises of the Royal Westminster Ophthalmic Hospital. During the congress two rooms were set apart as a museum of ophthalmic appliances, drawings, and literature, the exhibits including goggles damaged during use at various trades.

LONDON ASSOCIATION OF MEDICAL WOMEN'S FEDERATION.

AT a meeting on March 26th Miss F. M. HUXLEY took the chair, and an address on

Pain in Relation to Lesions of the Upper Urinary Tract

was given by Miss E. C. LEWIS. She distinguished three varieties of abdominal pain caused by lesions of the kidney and ureter: (1) colic; (2) pain in the loin and midaxillary region, due to lesions of the parenchyma; and (3) pain at the outer edge of the rectus abdominis, at the umbilical level, caused by distension of the pelvis. Colic in its most severe form was caused by a stone in the renal pelvis or ureter. Some writers thought that it was due to tension of the kidney capsule, others that it was a spasm of the unstriped muscle. Legueu's work on pyeloscopy seemed to support the view that there would be painful and vigorous contractions behind an obstruction, just as in the alimentary canal. Oddly enough, stones in the calices did not cause pain. Renal colic, however, did not always indicate the presence of a stone; similar attacks, though usually less severe, were caused by the passage of other foreign bodies, such as blood clots from a malignant growth, débris from a tuberculous kidney, or "showers" of crystals; also by irregular spasms in acute pyelitis, and ureteritis, and in Dietl's crises, and crises of nervous origin. The differential diagnosis included biliary and appendicular colics and those of intestinal and

pancreatic origin. The radiation of urinary colic was fairly characteristic. The other varieties of pain were more difficult to diagnose; they were often not particularly characteristic of the kidney, and gave no help in distinguishing between the different kinds of renal lesion. A heavy aching pain, often accompanied by tenderness, was associated with large kidney stones, and with ureteric stones impacted above a stricture or with those too large or lying too obliquely to be passed on; in these cases the patient was often unable to lie on the affected side. There were exacerbations due to superimposed attacks of pyelonephritis. A stone impacted in the lower end of the ureter caused vesical pain and frequency. In hydronephrosis, which was merely the evidence of obstruction to the outflow of the kidney, there was aching pain from distension of the pelvis and parenchyma, and, in large tumours, from dragging on the nerves of the pedicle and surrounding structures. Often the smaller distensions were the most painful. A great number of movable and dropped kidneys were symptomless, and required no treatment; others gave varying manifestations, nervous, or referable to the digestive system, including the curious one of jaundice when the affected kidney was on the right side; some caused renal obstruction and infection, with pain, either aching or colicky. Tuberculosis and malignant growths were almost negligible in differential diagnosis, the former because the slight aching in the loin was overshadowed by the bladder picture, and the latter because pain did not occur by itself, but was a late symptom, hæmaturia being the early one.

The simple acute infections were perhaps the most difficult to diagnose and deal with. The milder ones might be painless; often there was tenderness without pain. In more severe cases pain and tenderness in the loin, accompanied by fever, were the dominating features. In the fulminating cases the picture was more that of an acute abdomen. The spasms, strictures, and kinks of the ureter had received more attention in America than in this country. According to Hunner they gave rise to protean manifestations. The pain, when present, was felt in the lower abdominal quadrant, since the lesion was generally situated in the last few inches of the ureter. There might be tenderness where it crossed the brim of the pelvis, and also below the broad ligament. The pain was apt to be intermittent; some patients were only troubled at night, some by day, others in the early morning. There might be a free interval lasting for months. In 75 per cent. the picture was that of irritability of the bladder. The accompanying kidney manifestations were those of the distension and infections caused by the obstruction. Unfortunately, examination of the urine was not always helpful, as it was said to be normal in 30 per cent of these cases.

In differential diagnosis of the chronic types of pain lesions of the upper digestive tract need not be considered, since here there was no relation of pain to the taking of food. Acute perinephritis began just like acute renal infection, but the urine contained no pus, and kidney function was unimpaired. An inflamed gall-bladder was usually tender to pressure beneath the costal margin during deep inspiration. The pain of an appendix was rather more lateral than that of the ureter, and did not radiate in the same way. A lesion low enough in the ureter to simulate one in the uterine appendages would cause frequency. Calcified mesenteric glands must be remembered, and also radiation along the lower dorsal nerves, secondary to spinal or thoracic diseases.

BRIGHTON AND SUSSEX MEDICO-CHIRURGICAL SOCIETY.

An Alternative to Wheelhouse's Operation.

AT a meeting of this Society on April 4th, with Mr. GEOFFREY BATE, the President, in the chair, a paper on Retention of Urine was read by Mr. H. J. MCCURRICH. This condition, he said, might easily be overlooked when present, or diagnosed when absent. The former error was due to mistaking retention of urine with overflow for retention of urine; the latter to a failure to diagnose suppression of urine. A catheter would solve the difficulty, and should always be used before a diagnosis of incontinence was made. Mr. McCurrich had seen a patient who had been placed in seclusion as a case of mania. The real trouble was uræmia and retention of urine due to an enlarged prostate; his retention of urine with overflow had been mistaken for incontinence. In partial retention of urine, residual urine remained after micturition, and its amount indicated the degree of obstruction or the weakness of the bladder.

After a historical survey of the subject, and a consideration of causes, Mr. McCurrich concluded his paper with a discussion of operative measures. External urethrotomy, he said, apart from puncture for the relief of retention, dated from the early part of the nineteenth century, and in this country was associated with the names of Guthrie and Syme and, later, Wheelhouse. The disadvantage of Wheelhouse's operation was that great difficulty might be experienced in finding the way through the stricture when the urethra in front of it was opened. He had therefore devised the following operation.

The patient is anæsthetised spinally and placed in the lithotomy position. The bladder is opened suprapubically by a small incision into which is introduced a finger, and along this a sound is passed into the internal urinary meatus and along the prostatic urethra. Another sound is passed through the external urinary meatus along the anterior urethra. The tips of the sounds are then only separated by the stricture; a perineal incision on to the tops of the sounds divides the stricture. The tips of the sounds are exposed; the anterior one is rotated to extrude its tip. Each end of a piece of rubber tubing about the size of a No. 12 catheter is tied on to the sounds, a long window being cut close to the end of the one tied to the posterior sound. The sounds are withdrawn by the way they entered, the tube is drawn in with them, so that it traverses the urethra and bladder; each end of the tube is secured by a safety pin, so that, however restless and uræmic the patient is, there is little risk of his extracting the tube.

Each day, said Mr. McCurrich, the tube might be moved to and fro by means of the pin at each end, and in this way the urethritis associated with an indwelling catheter was diminished. The tube might be left in up to a few days or a week. The subsequent treatment and dilatation were the same as for a Wheelhouse operation. He had performed this operation first in 1925 and had done it twice since. The fact that the tube traversed the suprapubic wound did not delay healing.

DEVON AND EXETER MEDICO-CHIRURGICAL SOCIETY.

AT a meeting of this Society held on March 28th, with Dr. BERTRAM COHEN, the President, in the chair, a paper on eight cases of

Acute Intussusception in Infants

was read by Dr. J. DOUGLAS MURRAY. There were four patients, two of whom had one attack of intussusception each, whilst the other two had three attacks each. The cases occurred, he said, during a period of 13 months, and all four patients were males, healthy and robust, between 3 and 22 months of age. Six of the attacks occurred in children under 12 months' old, and these were breast-fed, except one child which was being weaned during the week before the onset of acute symptoms. Dr. Murray called attention to the fact that information about the ordinary food of the infant is rarely forthcoming in the notes of hospital cases, owing to the acuteness of the condition and the desire to remedy it as soon as possible after the child's admission. In the case of the children under 12 months of age careful inquiries

about diet were made at the time of admission, and dietetic errors or alterations were proved in each instance in spite of the mother's statement that the child was breast-fed. Inquiries by Fitzwilliams into the seasonal incidence of the disease showed that the maximal number of cases occurred in March and December, and that there was a steady decline in the incidence of intussusception during the summer and early autumn months when epidemic diarrhœa was most rampant. Also the majority of cases of epidemic diarrhœa occurred in children who were artificially fed, whereas acute intussusceptions were most often seen in healthy, breast-fed children. There seemed, therefore, to be no justification for regarding acute enteritis as a predisposing cause of acute intussusception.

Dr. Murray said that two of his patients had died, each with hyperpyrexia; in both these cases, and in these two cases only, could the intussusception be felt per rectum. The other two children recovered, each of them having three intussusceptions during the period of 13 months; there was never less than four months' interval between one intussusception and the next. In each case treatment was by laparotomy, with manipulative reduction of the intussusception. Dr. Murray discussed the non-operative treatment of this condition, and mentioned that uncertainty as to whether there was complete reduction of the intussusception seemed to be an insuperable drawback to this line of treatment. He concluded by considering the ætiology of the condition, and said that he regarded hypertrophy of the lymphoid tissue in the lower end of the ileum, consequent upon intestinal irritation produced as a result of some error in diet, as the chief cause of acute intussusception in infants.

The PRESIDENT mentioned two cases of which he had had personal experience. In the first the stools passed immediately after reduction contained a stub of asparagus. In the second the last portion could not be reduced and had to be opened up. An inflamed appendix containing pus was found inside.

Mr. A. L. CANDLER said that in his opinion elongated mesentery was the primary cause and that dietetic errors provided the stimulus. As regards diagnosis, he emphasised the importance of emptiness in the right iliac fossa and stated that in some cases the lump could not be felt without an anæsthetic because it was high up under the liver or lower ribs, but that under an anæsthetic the hand could be pushed up higher and the lump palpated.

Mr. N. F. LOCK drew attention to the lessened incidence of acute intussusception.

Mr. R. WAYLAND SMITH was of opinion that if a change of diet, or dietary indiscretion, was the cause of intussusception, a much higher incidence of cases would be expected, and agreed with Mr. Candler that the underlying condition which made an ileo-cæcal intussusception possible was a congenitally long mesentery.

In his reply Dr. MURRAY said that the cause of intussusception was a moot point, but agreed that the most probable cause was an error of diet in children with an abnormally long mesentery. He thought that the "signe de Dance" was of doubtful value.

SOUTHEND GENERAL HOSPITAL.—It has now been decided to proceed with the first portion of the proposed new hospital at Southend-on-Sea. This section, which will cost £111,000, will contain 164 beds, 40 of which will be for children, and others for paying patients. It will also include a nurses' home with accommodation for 60 nurses.

QUEEN'S HOSPITAL, BIRMINGHAM.—It was stated at the annual meeting of this hospital that 15,386 casualties were treated last year, and that ten beds have now been endowed by the efforts of the university students. On behalf of the medical staff the need was emphasised for a supply of radium, and for the provision of beds for paying patien s

Reviews and Notices of Books.

RECENT ADVANCES IN NEUROLOGY.

By W. RUSSELL BRAIN, D.M. Oxf., M.R.C.P. Lond., Assistant Physician to the London Hospital; and E. B. STRAUSS, B.M. Oxf., M.R.C.P. Lond., Medical Registrar to the Hospital for Epilepsy and Paralysis, Maida Vale. With 38 illustrations. London: J. and A. Churchill. 1929. Pp. 412. 12*s.* 6*d.*

THIS addition to the "Recent Advances" series makes excellent reading. In the last few years so much attention has been given to neurological research that the problem of what to omit must have been even more difficult to solve than that of what to include. In their range of selection the authors have been catholic enough for all minds, seeing that the matters discussed include, to mention but a few, questions of the cerebro-spinal fluid, neurotropic viruses, classification of cerebral tumours, conditioned reflexes, posture and tonus, X ray treatment of nervous diseases. In other words, physiologist, neuropathologist, clinician, and therapeutist alike will here find something of value for themselves. In one or two passages suspension of judgment might have been adopted. The statement, "it must now be regarded as established that the anatomical basis of encephalitic Parkinsonism is a lesion of the substantia nigra," reads curiously when, on the next page, we are informed that "the anatomical site of the lesion in paralysis agitans is more problematical." Further, these remarks leave untouched the question of whether, on other grounds altogether, a lesion of the substantia nigra is sufficient for the manifold semiology of that state. Again, it is inaccurate to say that the symptoms of "circus movements, difficulty in taking food, chewing and swallowing, voice disturbance, hypertonicity, tremor, athetoid movements, and constriction of the pupil," produced experimentally by striatal lesions in cats, "correspond strikingly" with those of hepatolenticular degeneration; some do, others assuredly do not. In some instances, again, the views of authors have not been reproduced with precision. But, on the whole, little complaint will be made by the many authorities whose work is summarised. Nor does perusal of the volume leave the impression of a mere réchauffé of the work of others; a book of this kind must contain numerous references to, and descriptions of, the investigations of neurologists, but these are here subjected to a careful sifting process; in passing through the minds of the two authors they have been freed from non-essentials and given a place in a general setting so that they can be appreciated at their true worth. This task must indeed have been far from easy, and we congratulate the writers on its efficient accomplishment.

NEUROBIOTAXIS.

Three Lectures on Neurobiotaxis and other Subjects. Delivered at the University of Copenhagen. By C. U. ARIENS KAPPERS, Amsterdam. London: William Heinemann (Medical Books), Ltd. 1928. Pp. 76. 7*s.* 6*d.*

THREE lectures, reprinted from the *Acta Psychiatrica et Neurologica*, are here published in convenient form, and deserve the neurologist's attention. Dr. Kappers is the exponent of that "psychical" law in the structure of the nervous system which he has called neurobiotaxis; in these pages its nature and mode of working are clearly and succinctly described. The second lecture deals with the corpus striatum from the standpoint of comparative anatomy and physiology; the third, with the development of the cortex and the functions of its different layers. Each subject is handled in a masterly way. Dr. Kappers doubts whether the highest development of the corpus striatum is found in man; compared with the

brain-stem its size is larger in some of the lower animals. He shows that in the archicortex there is a general differentiation into two layers only—a granular receptive layer near the surface where most afferent impulses run, and a deeper (subgranular) efferent pyramidal layer. In addition to these two, the neocortex possesses a third or supragranular layer, whose development distinguishes the higher levels in the animal series, and is a consequence of increase of corticipetal and associative fibres.

TWEEDY'S PRACTICAL OBSTETRICS.

Sixth edition. Edited and largely rewritten by BETHEL SOLOMONS, M.D., F.R.C.P.I., Master, Rotunda Hospital. London: Humphrey Milford, Oxford University Press. 1929. Pp. 759. 25*s*.

THIS book, for 20 years well known and greatly appreciated, appears now in a slightly extended form under the guiding hand of the present Master of the Rotunda, who collaborated with Dr. Tweedy in the previous edition. Now solely responsible, Dr. Solomons has impressed his style and teaching on a work which always had a character of its own and has made the blend of the old Master and the new into a wonderfully uniform composite production. Doubtless amalgamation was simplified by the close relationship of teacher and pupil and by the fact that the book represents the practice of one great hospital in which both have served and in whose traditions both are versed.

Dr. Tweedy's original aim was to fill blanks in the practical knowledge of the recently qualified, and he omitted "all that is theoretical and not immediately useful to the practitioner." Dr. Solomons has wisely added an introductory portion contributed by Prof. Bronté Gatenby on anatomy and embryology, and himself has inserted the physiological matter necessary to open the appropriate chapters in Part II., covering normal pregnancy, labour, and puerperium. Part III., on abnormal pregnancy, begins with a chapter on toxæmia, and here the new author has allowed himself almost too complete an absolution from the restrictions of the title and original purpose of the book, and has devoted some few pages to theory before he gets down to the practical aspects of his subject. When he does so descend, however, he gives a clear and exhaustive account of the Rotunda method of treating eclampsia. Here he insists on "the necessity of paying the very strictest attention to every detail of this treatment," and in support of this injunction can point to the excellent results obtained in his hospital.

It is interesting to note a few changes that have come from a review of further experience of the methods recommended in previous editions. In accidental hæmorrhage the old Rotunda method of vaginal plugging, so strongly advocated by Tweedy, is now rarely employed and is reserved for cases in which the simpler treatment now advised fails to curtail bleeding and signs of collapse persist. Submammary saline infusion, rupture of the membranes, and injection of pituitary extract form the basis of the treatment now adopted. Another subject on which views have been reconsidered is uterine inertia, since, like many others, Dr. Solomons has found difficulty in fitting his cases into the types commonly described as primary and secondary, and in explaining the causes of these types, or as he says, "in determining whether there is anything outside the uterus making it inert." We doubt whether his vague conceptions of the primary form as being due to weak nerve-impulse, weak muscle, or hormonic cause will be found helpful. From the wide prevalence of rickets in Dublin, it follows that the chapter on pelvic disproportion is complete and practical and full of sound clinical experience. The Cæsarean section operation, much too often performed by those without adequate knowledge of alternative procedures, is here put into its proper place, and for conditions other than pelvic disproportion its adoption is also strictly limited. It has been wholly abandoned for accidental hæmorrhage, and is rarely used in placenta prævia.

Dr. Solomons disdains the dicta of tradition and authority if they do not accord with his clinical experience, but is at times himself dogmatic—no fault in a teacher. Thus, though its character has been somewhat changed, this work is as interesting as it ever was and fully maintains its individual distinction. It is a remarkable tribute to the great hospital whose methods are given deservedly wide prominence in its pages.

ELEMENTARY HYGIENE FOR NURSES.

Fourth edition. By H. C. R. DARLING, M.D. Lond., F.R.C.S. Eng., Surgeon, Coast Hospital, and Lidcombe State Hospital, Sydney, N.S.W. London: J. and A. Churchill. 1929. Pp. 292. 5*s*.

APART from the title and the statement in the original preface that "this work is primarily addressed to nurses," there is little about it to indicate its special suitability for nurses reading for their final examination. The book is not in any way confined to the principles of hygiene or written in simple language, and the matter is largely similar to that contained in public health text-books designed for medical graduates studying for the diploma of public health. The fact that so much has been compressed into a small space does not make for clarity, and, indeed, causes the matter to be more difficult of digestion than that contained in the larger text-books, which have more space for explanation.

PARASITOLOGY.

Travaux pratiques de parasitologie. By E. BRUMPT and NEVEU-LEMAIRE. Paris: Masson et Cie. 1929. Pp. 302. With 202 figures. Fr.30.

THE importance of parasitology increases each year, and it is becoming more and more obvious that extensive practical instruction should be an integral part of every student's curriculum. Several excellent text-books on the theoretical aspect of the subject exist—notably one by Prof. E. Brumpt, of Paris. The need for a practical text-book on the subject has now been met by Brumpt and Neveu-Lemaire of the Department of Parasitology of the Paris Faculty of Medicine. In some 300 pages they cover the ground necessary for such a course, dealing not only with the parasites proper, but also with medical entomology, mycology, and with the zoological aspects of the various intermediate hosts. The book is well conceived, well written, and fully illustrated, and should prove an excellent and reliable companion to every student of the subject.

CATALYTIC PROCESSES IN APPLIED CHEMISTRY.

By T. P. HILDITCH, D.Sc., F.I.C., Professor of Industrial Chemistry in the University of Liverpool. London: Chapman and Hall, Ltd. 1929. Pp. 360. 16*s*.

ONE of the outstanding modern tendencies in manufacturing chemistry is the increased attention being paid to the development of catalytic processes. This book is addressed to those already acquainted with one or more phases of catalyst technology, and to others who may desire to apply catalytic action to manufacturing problems in which it has not previously been employed. The book is divided into four sections, dealing with the general principles of catalytic action, catalysis at the surface of solid inorganic materials, catalysis at surface of colloidal organic compounds—i.e., fermentations—and homogeneous catalysis in liquid systems. This method of classification enables the author to create order out of chaos and to cover successfully a very large range of widely differing processes. The style is throughout clear and interesting and reveals a detailed knowledge of the processes described.

THE LANCET.

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CONDITIONED REFLEXES.

ONLY in the last year or two has the work of Prof. IVAN PAVLOV, of Leningrad, aroused that widespread physiological and general interest which its remarkable character deserves. For the major part of his long lifetime he has, with singular constancy, devoted himself to the study of problems arising from the curious phenomena of what he terms the "conditioned reflex," but his published contributions have been, with few exceptions, restricted to the Russian language. It is therefore a matter of importance for the English reader to have in his hands a complete reprint of all these papers, excellently translated, of which the first is dated 1903, and the last (of 41) 1928. Moreover, the translator, Dr. HORSLEY GANTT, gives us a biographical sketch of the veteran physiologist which brings the man before us in graphic fashion and enables us to understand better his single-minded enthusiasm for the child of his brain. For it can scarcely be questioned that the association of PAVLOV with conditioned reflexes will remain as historical a combination as that of DARWIN and evolution.

With the assistance of something like one hundred collaborators in the course of these fruitful years, uninterrupted even by war and revolution, Prof. PAVLOV has probed ever deeper into the problems of cerebral function, and is at length in a position not only to add materially to knowledge of neural mechanisms, but to throw much-needed physiological light on the nature of not a few processes commonly considered to be essentially psychical. His results have been obtained by strictly objective methods, the subjective factor being completely eliminated by a technique the details of which are almost as fascinating as their application. For a basis two varieties of reflex have been utilised—the unconditional and the conditional. The former is innate, permanent, invariable; that employed throughout (the dog being the experimental animal) is the salivary reflex—viz., when the buccal cavity is stimulated by the insertion either of food or of acid, a reflex flow of saliva occurs, which can be measured with exactitude. Now a similar secretion can be readily exc ted if food is merely shown to the animal; the salivary centres can be reached by extrinsic stimuli of a visual kind; and if food is administered at the same time as a stimulus of still another kind—for example, auditory or cutaneous—then by dint of sufficient repetition these stimuli in their turn will evoke the salivary reflex by themselves. That is to say, properties which bear no direct relation whatever to the physiological rôle of the saliva can be made to act as stimuli—for example, form, colour, tactile and painful sensations. Excitations of this kind are dependent on a number of conditions, and are described as "conditional," or, more usually, "conditioned." The reflex which they elicit is a "conditioned" reflex; it is temporary, acquired, and modifiable. By numerous experiments Prof. PAVLOV has proved that the locus of conditioned reflexes is cerebral; for their appearance integrity of the cerebral hemispheres is a sine qua non. Any stimulus of any kind (and their number is legion) can be utilised for the purpose; it can be made into a signal, and from its receptor centre there must evidently be an open physiological path to the salivary nuclei. If eye, ear, nose, or skin is affected by any imaginable phenomenon of an excitatory kind, this can be turned into a conditioned stimulus and can arouse a conditioned reflex. And these statements are to be taken literally; the experimenter's voice, accents, appearance, clothes, his handling of the animal, his touches, caresses, the sound of his step, his *parfume humaine* (in one striking instance his garments by themselves)—one and all form the material for conditioned salivary secretion. "He" is, in point of physiological fact, an external synthetic stimulus. On this ground alone, although also on others, it may justifiably be claimed that a series of stimuli commonly thought to be of a psychical order act precisely and invariably, under conditions, as do intrinsic physiological stimuli.

In the higher parts of the nervous system, then, there exists a potentiality for temporary coupling of conduction paths, a universality of possible connexions, which serves to illumine cerebral function in an impressive way. Evidently these possibilities are infinite; according to JUDSON HERRICK, the number of possible connexions of two neurones in the human brain is $10^{2.7^{3,000}}$. There can be no end to conditioned reflexes, which means, in other words, that the human brain is never at an end; probably no one ever uses anything else than a fraction of his cerebral endowment. It is an organ of immense plasticity, capable of new acquisitions, even if temporary, as long as it lives. A corollary of this modifiability must be that there is comparatively little of the cerebral cortex that is organised, and in which specific centres can be placed. While Prof. PAVLOV accepts an anatomical cortical site for the receptive fields of the senses, and though he certainly regards the cortex as a mosaic of function, he does not overlook the implication of his experiments in so far as they demonstrate possibilities of compensation and substitution. For him, that function is constituted by stimulation and inhibition, and by irradiation or, alternatively, by concentration, of each of these; there is nothing else. He has found no trace of any "higher" function; and he reduces the complexities of the most elaborate cerebration or mentation to combinations of conditioned reflexes. He speaks of the reflex of "freedom," of "purpose," of "slavery," of "defence," of "collecting," of "sleep," nay, of "life" itself. Nor is this a mere *façon de parler*: it is a legitimate inference from the behaviour of his animals under the strictest scientific technique in the experimental room. The dog, by means of his cerebrum and its sense centres (or "analysers") decomposes the whole complexity of the external world into its units; he uses a synthesising mechanism and an analysing mechanism. Thus he makes a perfect adjustment, ensures a perfect equilibration, and there is every reason to believe man does the same. Training, education, habits, orientations in the external world, with all its events, natural and social—what are these in the last resort but either a formation of new connexions, or a superfine analysis?

Of the many-sided nature of Prof. PAVLOV's general conclusions the reader will soon convince himself. It is already widely recognised that he has explained the phenomenon of sleep in a manner more consonant with the facts than any previous hypothesis. Sleep is nothing else than internal inhibition; a stimulus which ordinarily awakens a conditioned reflex of salivary flow can by repetition under appropriate

circumstances bring about reflex inhibition, and sleep ensues. Sleep can be produced at any time, infallibly, by conditioned technique. If the internal inhibition is confined to the motor cortex, the clinical condition of the animal is one of catalepsy; it is hypnotised. In the latest adaptation of his laboratory methods Prof. PAVLOV's operator is in one room while the animal is in another. All that is requisite is to set the machinery in motion; stimuli, invisible and inaudible to the experimenter, are repeated mechanically; at the end of the experiment he goes into the animal room and there is the dog, fast asleep. Possibly still more remarkable are the results of investigation in regard to what most people would call animal psychology, a term which the Russian physiologist discards as otiose. Studying the whole behaviour of the dog, as expressed in synthesis and analysis, he finds that three general classes or types of animal can be distinguished. In the first, irradiation of excitation takes place with facility and regularity; in a second, irradiation of inhibition is always pronounced; in a third, the two processes are more evenly balanced. The animal of the first group is of a choleric temperament, while the second is melancholic; the third group is divisible into two subgroups, representing the sanguine and phlegmatic temperaments respectively. Is all this somewhat speculative and far-fetched? we may ask with perhaps a little impatience. The answer is that it is possible actually to produce neurotic manifestations in the dogs of the first two classes, and Prof. PAVLOV gives us all the details of his method. This consists, briefly, in causing conflict among conditioned stimuli and conditioned reflexes. Take a dog of excitatory type, in which inhibition is always weak; apply two stimuli, one immediately upon the other, differing slightly from each other but so arranged that they collide, as it were; then at once, or after a few repetitions, the dog becomes positively ill. He retains only excitatory processes; the normal relation between excitation and inhibition has disappeared; the animal "breaks down" nervously, and often remains so for months at a time. It is a serious illness, for which treatment is necessary. Similar but opposite circumstances occur in the case of the group with predominance of inhibition. But the normal animal can be experimented with along the same lines without any untoward effect. He must be unimaginative indeed who fails to realise the import of these physiological experiences of the laboratory for the clinical problems of the psychopathologist and neurologist.

SURGERY OF THE CHEST.

THE increasing success that is attending surgical operations on the thoracic cavity, so admirably described by Dr. R. A. YOUNG in his masterly review of the subject in the Lumleian lectures, concluded in our present issue, may make us wonder why this branch of surgery has remained so long undeveloped. We may experience still more surprise when we realise that Sir WILLIAM MACEWEN, in 1895, removed the whole of one lung for advanced tuberculous disease, and that the patient survived and was alive 18 years afterwards. The reason may well be that the delicately coördinated, highly organised team-work described by Dr. YOUNG is essential to success. Without it sporadic, perhaps fortuitous, successes will occur but steady advance will never be made. The mortality will inevitably remain too high to encourage the physician or general practitioner to call in the aid of the surgeon. The component parts of such a team are these: a physician who is truly expert in chest diseases, with a mind critically receptive of any fertile suggestions for improvement in the technique of treatment; a surgeon who is not only master of a skilful and gentle technique but who can appreciate the medical aspect of the case, who will give painstaking attention to every detail, and is willing to learn by the experience of those who have already trod the thorny path of the pioneer; an anæsthetist who understands the special problems of thoracic surgery; sisters and nurses who are highly trained, observant, sympathetic, and who realise the importance of conscientious and continuous nursing; and an expert assistant. Another essential factor in such a team is that its members should remain associated together for some time and should not be continually changing. Such a team is not so easily formed in this country perhaps as elsewhere, and it may make us wonder whether the newer fashion of frequent changes amongst hospital sisters is so helpful as the older régime, where, though the sister might develop into something of a tyrant, she was certainly a highly skilled person. A physician without imagination, and whose scepticism has been heightened by contact with indifferent surgeons, may effectively hinder progress by refusing to consider surgical treatment. A surgeon and an anæsthetist who fail to learn from the experience of others will do the same. The pioneer work has been done. Experience has been gained at the expense of a high mortality, justified because the conditions were desperate. But there cannot be many little pioneers burgeoning in many parts, all working out their own salvation. Details such as the perfect adhesion of the pleural layers in certain cases of thoracotomy, the temperature of the operating theatre, the decision to operate in one or more stages, the choice of the mode of anæsthesia, will turn the scale between asuccessful and a fatal issue.

The advance in both diagnosis and treatment of diseases of the chest in the last two decades is remarkable. It is but a few years since JACOBAEUS published his paper on thoracoscopy, in which he described a series of cases of innocent intrathoracic tumours, several of which were successfully removed by EINAR KEY. Not only did his paper stimulate work on this subject, but it raised again the possibility of successfully removing malignant tumours. As Dr. YOUNG points out, there are many difficulties, whether technical or inherent in the morbid anatomy of the chest, but enough has been achieved to enable us to hope that new routes of approach may be discovered, and that tumours may be recognised at an operable stage. Even where removal is not possible, it is to be hoped that a path may be found for the effective application of radium. Dr. YOUNG has compressed into his series of lectures a well-nigh incredible amount of valuable information, enriched by observations from his own mature experience. Their peculiar value is that there is scarcely a word that will meet with dissent from any expert worker on diseases of the chest throughout the world. They will, we trust, be read and inwardly digested by every medical man who has patients under his care. The present unsatisfactory state of the treatment of bronchiectasis is indicated, and yet enough is said to suggest the lines on which ultimate success may be achieved. The lecturer's summary of the treatment of empyema is admirable; from the oceans of literature on the subject Dr. YOUNG has succeeded in extracting the pearls. Such knowledge still needs wide dissemination. Many of the accepted beliefs in the profession at large on the subject of empyema are hazy and erroneous. How many know exactly when an

empyema should be tapped, when a rib should be resected, and when not? In pulmonary tuberculosis, how many practitioners are able to discern when a case is passing beyond the aid of ordinary measures, and when so passing what is the right course to adopt? The review given in the Lumleian lectures cannot fail to increase the knowledge of what may be achieved by thoracic surgery and materially to assist in its evolution.

THE SAVING OF THE CRIPPLE.

In no phase, perhaps, of preventive medicine has progress been so rapid and effective as in the treatment and cure of crippling in children. The story of the recent change in the public attitude towards the cripple from one of fear and repugnance, existing from earliest times when the deformed were persecuted as possessed of the devil, through a period of grudging tolerance of suffering and deformity as a necessary evil, to the modern standpoint that most of the crippling can be avoided, is told by Sir HENRY GAUVAIN and Dr. EVELYN HOLMES in a paper whose publication we conclude this week. This change of attitude has been brought about by the devoted services of a few lay and medical pioneers, including Mrs. HUMPHRY WARD, Mrs. C. W. KIMMINS, Sir WILLIAM TRELOAR, Sir HENRY GAUVAIN, and Sir ROBERT JONES. The lay workers established schools where the personality and character of the sufferer was allowed to develop along normal lines in a somewhat sheltered communal environment, while the medical men proved how unsatisfactory was the so-called radical treatment in comparison with the conservative methods now relied on to prevent the disastrous consequences of crippling diseases.

Official recognition of the special needs of crippled children has but slowly followed in the trail of these leaders; perhaps necessarily so, since no public body dare spend money until public opinion is assured that expenditure is justified. Now, however, the lag of indifference and laissez-faire is being overtaken. The best aspects of sporadic, voluntary, and official methods are being coördinated to deal with this mass of needless suffering; schemes for orthopædic treatment, embracing the work of private practitioners, medical officers, consultants, and voluntary bodies are springing up all over the country, and new methods and a broader national outlook are moulding and forming a policy which promises to prevent, as Sir HENRY GAUVAIN and Dr. HOLMES estimate, between 70 and 90 per cent. of the amount of disability now occurring. Certainly the elementary school child has the promise of greater and ever greater facilities for effective medical supervision, prevention, and treatment, but Sir HENRY does well to draw attention to the needs of children of the secondary and public school classes in our nascent schemes for dealing with crippling. There are at present no means whereby crippled children from well-to-do homes—even with considerable outlay—can benefit by prolonged hospital school treatment, comparable with that available for the State-aided child. True, some 70 per cent. of crippling is found among the poorer strata of society, but this still leaves 30 per cent. among the other classes who cannot have prolonged treatment of the right sort. The average length of stay in hospital schools to ensure quiescence and stabilisation is perhaps two years, during which time not only specialised medical treatment but education along the right lines is essential. This period of more or less active therapy is properly followed by daily attendance at special physically defective schools where effective medical and nursing supervision is continued, if necessary until the child is 16 years of age, whilst his later progress may also need to be watched in special cases. No such facilities, however, exist for other than State-aided children. We know that untreated physical defects by excluding children from the corporate life of their fellows often lead to a sense of inferiority and to social inefficiency, and Sir HENRY GAUVAIN and Dr. HOLMES are right in expecting the support of the medical profession when they say that we have here a state of affairs that must be remedied.

In his wise conception of the needs of the body Sir HENRY has from the first appreciated the necessity of tending the mind by suitable education, not alone to supply the immediate requirements of interest and happiness that help to maintain or restore health, but also to supply knowledge, and the means and ways of applying knowledge and of adaptation when the child later takes his place in the industrial world. In acute illness rest is essential, both of body and mind, and the question of occupying the mind does not enter into the scheme of general hospital treatment. But during convalescence from acute illness, such as rheumatic fever, or in the long periods required in treating the cripple, a cheerfully occupied mind is of the first importance. All convalescent and other hospitals taking patients of this kind should therefore have educational facilities as a fundamental part of their equipment, the educational side being part of the medical treatment and under the direct supervision of the medical man. Sir HENRY says that nearly 1 per cent. of all elementary school-children need treatment and special education for crippling defects—i.e., between 30,000 and 60,000—and if we add some 10,000 children not of the elementary school type we get an idea of what has to be done. The age of onset of crippling, other than that of the heart, falls predominantly in the pre-school era, and there are indeed many who believe that the seeds of rheumatic heart disease are also sown before school age. Over and above this the school medical service has shown that some 30 to 40 per cent. of school entrants suffer from minor defects. All this clearly indicates how great is the need for an effective medical supervision of the pre-school child, and it is not unlikely that the next big step forward in preventive medicine so far as the poorer classes are concerned will be an extension of maternity and child welfare schemes to embrace all children from conception to the school age. The growing momentum of combined social and medical preventive work must be clearly recognised, but the task of resolving these forces along satisfactory lines is not one that can be attempted by anything less than a united professional opinion.

PATHOLOGICAL RESEARCH IN ITS RELATION TO MEDICINE.—A course of lectures on this subject will be given at the Institute of Pathology and Research, St. Mary's Hospital, London, W., on Thursday afternoons, at 5 P.M., from April 25th to June 13th inclusive. The lecturers will be Sir Almroth Wright, F.R.S., on the Experimental Method in Medicine (April 25th); Prof. Ariens Kappers, of Amsterdam, on the Phylogenetic Development of the Protopathic and Epicritic Centres in the Central Nervous System (May 2nd); Dr. E. D. Adrian, F.R.S., on the Nervous Mechanism of Sensation and Movement (May 9th); Prof. F. T. G. Hobday on the Value of Research into Animal Diseases as an Aid to the Study of the Diseases of Man (May 16th); Prof. W. W. C. Topley on the Natural Acquirement of Immunity (May 23rd); Prof. F. W. Twort, F.R.S., on the Position of Ultra-microscopic Viruses in the Living World (May 30th); Prof. William Bulloch, F.R.S., on the History of Bacteriology (June 6th); and Prof. J. A. Gunn on Variations in Susceptibility to Drugs and Toxins (June 13th). These lectures are open to all members of the medical profession and to all students in medical schools without fee.

Annotations.

"Ne quid nimis."

THE KING.

WE published in THE LANCET of April 6th the official bulletin issued from Craigweil House on March 29th. Another bulletin was issued from the same residence on Sunday, April 14th, as follows: "His Majesty the King continues to make satisfactory progress, and the rheumatism of the right shoulder is yielding to treatment." The bulletin was signed by Sir Stanley Hewett and Lord Dawson of Penn.

THE LOCAL GOVERNMENT ACT.

As a forerunner of the detailed memoranda to be issued to local authorities on the different parts of the new Local Government Act, the Minister of Health has promulgated a general introductory circular, from which extracts are printed on p. 841 of this issue. The circular summarises with remarkable lucidity the principles of the new law; it sets out the defects of our present system, and it names the remedies which the Act provides. It explains the transfer of the functions of poor-law authorities to the councils of counties and county boroughs, the readjustment of the cost of roads, the proposed survey of the areas of county districts, the derating arrangements, and the distribution of consolidated grants according to the needs of the areas concerned. While drawing attention to the actual administrative and financial changes in prospect, the Minister takes this early opportunity of emphasising the importance of the spirit in which the Act is operated; he asks for the fullest collaboration from local authorities, their officers, and the general public in the task of developing a scheme of sound local government, and particularly the protection and improvement of the health of the people. The Local Government Bill, which received the Royal Assent before the Easter adjournment, had a fairly smooth passage through Parliament. Based on past recommendations to which members of all parties had committed themselves, advocated in the House of Commons with masterly skill and team-work, its principles were but little shaken by political opponents. But there are still difficult days ahead. Duties cannot be taken from hands which have discharged them with pride and fidelity, nor can the traditional boundaries of the English countryside be altered, without umbrage and irritation. There is no need to take notice of the facile and unworthy criticism of those who, themselves shirking the necessary study, protested that the proposals were too complicated to be commended to modern democracy. The Act is now upon the statute book, and the citizens to whom its administration will be confided can examine it before its main provisions take effect in April next year. Evidently the Ministry will give all possible assistance, though at this point two observations may perhaps be permitted. The first is that departmental memoranda are not a complete substitute for the actual text of the statute; even if the week-end of Easter intervened, it is disappointing that an important Act of Parliament passed on March 27th should be still unpublished more than a fortnight later. The second is that the Minister can earn the gratitude of all medical officers of health and members of local authorities if he will set the official draftsmen (who will have unusual leisure in the next few months) to work on the re-statement of our local government enactments in an orderly code. The consolidation of those enactments involves neither political controversy nor a charge on the public purse. They were notoriously in a tangle before; their state is far worse now.

GLAUCOMA SECONDARY TO IRITIS.

CASES of iritis or irido-cyclitis which develop high tension are among the most difficult that the practitioner has to encounter. On the one hand, an eye with raised tension is glaucomatous, and the first thing to be done in cases of glaucoma is to instil eserine. On the other hand, the remedy for iritis is atropine, and eserine is distinctly harmful. What, then, should be done? At a discussion on the causes and treatment of irido-cyclitis with raised tension at the 1928 Congress of the Ophthalmological Society (the report[1] of which appears in advance of the present Congress) three types of cases were distinguished by Mr. W. H. McMullen. In the first type increase of tension occurs soon after the onset of acute inflammation. In these cases there are usually abundant keratic precipitates and the anterior chamber is usually deep, or at any rate not shallow as in primary acute glaucoma. Some authorities have advocated the use of miotics in these cases, but the weight of opinion is decidedly against them and in favour of pushing atropine as in ordinary cases of acute iritis. Atropine keeps both iris and ciliary muscle at rest and it prevents the formation of synechiæ. To combat the inflammation is the best means of preventing the increase of tension due to it. If, however, the tension does not come down, and especially in cases where the anterior chamber is shallow, the difficulties of deciding on the line of treatment are great. In proportion as the case approaches in character to one of primary glaucoma the temptation to use eserine becomes strong. Mr. Harrison Butler, while advocating the pushing of atropine in these cases—the higher the tension the more he would push it—admitted that in some cases this would not do. In some doubtful cases he used homatropin alternating with pilocarpine, by which method he avoided adhesions and yet prevented the iris from bunching up in the angle of the anterior chamber, mechanically raising the tension. The question of operation was discussed but it was generally agreed that with acute irido-cyclitis it should, if possible, be avoided. Iridectomy, involving trauma of a structure in a state of acute inflammation, is obviously contraindicated. Trephining is liable to be followed by blocking of the trephine hole by exudation. The simplest procedure is the best, but tapping the anterior chamber by paracentesis has only a very temporary effect and it may not be feasible to repeat it many times. Some form of sclerotomy is probably the safest procedure in case of necessity, and some surgeons speak well of Herbert's "small flap sclerotomy." It is impossible to lay down any general rule for these cases, each of which must be judged on its own merits. For the general practitioner the chief moral is the necessity of being able to distinguish between primary and secondary glaucoma, so as to make no mistake in taking the emergency measures called for when a specialist cannot at once be consulted.

Mr. McMullen's second type of cases comprises those resembling acute or subacute glaucoma in which careful examination reveals signs of uveal inflammation. These differ from the first type in that the signs of iritis or cyclitis are not nearly so obvious or so severe. The keratic precipitates may be so slight that they can only be detected by the slit-lamp. In these cases, to quote Mr. McMullen, "it is probable that the irido-cyclitis is not the essential factor but that we have to deal with eyes that were predisposed to glaucoma by anatomical or other changes, eyes in which the mechanism for regulation of pressure allowed a very small margin of safety, and that the occurrence of a slight irido-cyclitis upset the delicate balance and determined the onset of glaucoma." Indeed, these cases approximate to true glaucoma, and before the general use of the slit-lamp and corneal microscope passed as such. It has even been asserted that most cases of so-called primary glaucoma are really of this type, but here

[1] Transactions, vol. xlviii., pp. 45–82.

there is the possibility of a fallacy. According to Mr. Harrison Butler, in the case of pigmentary deposits on the back of the cornea so minute that they can only be seen with the slit-lamp, these are not necessarily the results of an inflammatory process, for in elderly people the pigment round the pupil margin tends to become free as the result of a senile degenerative process and being deposited on Descemet's membrane may simulate true "K.P." In his opinion the majority of doubtful cases turn out to be primary glaucoma. In general we may say that the objections to treating this second type of cases as true glaucoma are much less valid, and operation is generally called for, either iridectomy or sclerectomy.

Cases of the third of Mr. McMullen's types are those of chronic irido-cyclitis in which increase of intra-ocular pressure occurs months or years after the onset of obvious inflammation. When it is long continued nothing but operation is likely to relieve it permanently. In the absence of an acute attack iridectomy may have a favourable affect on the irido-cyclitis, and this combined with some procedure which will result in a filtering cicatrix is generally indicated. In chronic or subacute cases where there is time to investigate the possible causes underlying the condition and especially any form of septic infection, the effective removal of such causes must naturally take precedence over other treatment.

LEPROSY IN AUSTRALIA.

A NOTEWORTHY contribution to the epidemiology of leprosy has been made by Dr. Cecil Cook,[1] Wandsworth Research Scholar of the London School of Tropical Medicine, and appears opportunely at the opening of a campaign for the elimination of leprosy from the British Empire within a generation. To quote the prefatory words of Dr. J. H. L. Cumpston, Director-General of Health: "This volume presents for the first time a complete record of the known facts relating to leprosy in Australia."

Among the many problems confronting Dr. Cook was the variable behaviour of the disease in different parts of the continent. For example, why does leprosy attack the white population of New South Wales and not that of Victoria? Why does the legislation, which is effective in controlling the disease in New South Wales, fail to prevent an actual increase in prevalence in Queensland? Again, the difficulty in tracing case-to-case infection led Ashburton Thompson to the conclusion that in New South Wales the evidence pointed to the probability "that the infection of leprosy is received by man from his environment rather than from the sick." Dr. Cook carried out his investigations during the years 1923–25 and, for the purpose of studying local conditions in endemic areas, examining relatives of patients and making a leprosy survey of territory hitherto overlooked, he travelled about 15,000 miles by motor, several thousand miles by rail and steamer, and some hundreds on horseback. He deals in separate chapters with leprosy in the Northern Territory, Western Australia, Queensland, New South Wales, and Victoria. His account of the origin of outbreaks of leprosy will be convincing to most of his readers. There was no leprosy, he says, amongst the aborigines before the white settlement of the continent, but the disease was not introduced by the whites. During the gold-rushes of the sixth decade of the nineteenth century there was a large influx of Chinese labourers, and about a decade later of Polynesians, and amongst the immigrants of both races there were many lepers. These immigrants consorted with the aboriginal women and the tribes of aborigines in due course became infected. In the early days each tribe kept to itself but the gradual removal of inter-tribal restrictions facilitated the spread of infection. The pioneer white population were males only and a decade or two later the disease spread to them owing to cohabitation with infected aborigines. There was no sufficiently intimate contact between the infected aliens and the whites to provide for direct transmission of infection. The aboriginal women filled the rôle of intermediary; the whites were infected a decade or two later than the aborigines and the first whites infected were adult males. When the pioneer white communities were replaced by families, the white infection became domesticated, as in New South Wales. The early disappearance of the aborigines from Victoria to the northern regions removed the intermediary link but the original method of infection is still operative in the north. The increasing prevalence in Queensland is, he considers, attributable to unrecorded cases, unsuspected undiagnosed cases, and concealed cases. In the early days the medical men were unfamiliar with the disease and it has often been regarded as syphilis.

In the course of his report Dr. Cook goes fully into the possible ways in which the disease is spread. Hereditary infection he regards as untenable, although the history of certain families cited may suggest the transmission of a predisposition. Environment per se is powerless but if human infection is introduced it seems to spread more easily in humid coastal regions than in dry inland areas. Moreover, the form of the disease prevalent among the whites —though not the aborigines—in the dry inland districts is the neural non-infective type. Dr. Cook's investigations do not lead him to attach importance to the effect of biting insects or to the possibility of true insect vectors. The bed-bug is absolved. While admitting that there is a prima facie case for the transmission of leprosy to man from the rat by the agency of *Xenopsylla cheopis*, he points out that the conditions of life among the aborigines do not favour this means of transmission. He sums up Australian experience by saying that "where infection has not been domestic, the commonest indication is infection from aborigines under circumstances provoking contact of the most intimate nature—cohabitation and sexual promiscuity." He draws the conclusion that leprosy "should be readily eradicated by a system of prophylaxis which ensures that lepers shall have no opportunity of associating closely with uninfected persons," and goes on to emphasise the weak points in the present system, including the lack of inter-State coöperation.

[1] Service Publication No. 38. Australian Ministry of Health. Canberra.

THE COMMON COLD AND ULTRA-VIOLET LIGHT.

THE sufferer from frequent heavy colds is a miserable creature. He gets little sympathy from friends whose experience of colds amounts to no more than a couple of days' discomfort; his employer will allow no sick leave for a "mere cold"; his relatives shun him for fear of infection; his doctor has nothing to suggest save time-honoured palliatives that scarcely palliate; and his Minister of Health execrates him for going about the world spreading germs. Meanwhile he is struggling to carry on while feeling really ill for about a week, and he is likely to be "run down" for the best part of a month afterwards. The cold is a difficult thing to study statistically, but a college group offers a good field for investigation, and the department of hygiene at Cornell University has realised the possibility of reducing the catarrhal chaos to some kind of order by observing the students in residence. Dr. D. F. Smiley,[1] who records some of his findings among 2485 students of both sexes, says that there seemed to be a definite group of people (rather less than 20 per cent.) immune to colds, and another group (rather more than 20 per cent.) seriously susceptible in that they had four or more every year. A graph shows that it is the small susceptible group who are really responsible for the winter epidemics, and Dr. Smiley believes that any measure which would control the colds of the few who have more

[1] Amer. Jour. of Hyg., March, 1929, p. 466.

than four a year might very well eradicate the big epidemics which cause so much loss of time and endanger so many lives. He was unable to find any difference in the general physique or physical make-up to distinguish the cold-susceptibles, but their history showed a greater liability to asthma, hay fever, and infectious disease. Smoking, mouth-breathing, sleep- and exercise- habits, clothing, exposure to draughts, tendency to perspiration, family history, and the use of a daily cold bath, could—according to the Cornell figures—all be discounted as ætiological factors in the "cold diathesis." There was, therefore, nothing to guide prophylaxis. Previous experiments had convinced Dr. Smiley and Dr. G. H. Maughan that there was a definite reciprocal relationship between the incidence of acute respiratory infections and the average daily hours of sunshine, and it occurred to them that there might be some vitamin deficiency or disorder of vitamin metabolism during the dark months of the year which would lower the resistance of the human body to cold-producing organisms. On this hypothesis 23 of the sensitive Cornell students were irradiated weekly with a quartz mercury-vapour lamp, a control group receiving no treatment. The dosage was small, as the investigators thought it had been excessive in previous experiments where results had been negative. The average number of colds for the autumn term was 1·56 for the irradiated students and 2·80 for the untreated, the figures being 1·24 and 2·79 respectively in the second term. Smiley and Maughan are conservative in their claims, but suggest that their results justify the use of short weekly irradiations with ultra-violet light in cases of marked susceptibility to colds where even a 40 per cent. decrease in incidence would be welcome. Much larger series will be required to convince the sceptic, but this contribution may be regarded as supporting the people who believe that they are saved from winters of misery by systematic irradiation or by immediate exposure for a few minutes as soon as the premonitory symptoms of the dreaded cold are experienced.

THE CENTENARY OF BILLROTH.

LAST week the profession in Germany and Austria celebrated the centenary of one of the outstanding personalities in the medical history of the nineteenth century.[1] Theodor Billroth was born on April 26th, 1829. He was a great surgeon, perhaps the greatest of his time, but what distinguished him more than any one attainment or quality was his possession in equal measure of those gifts which capture the heart and imagination. Besides his surgery he had an exhaustive experimental knowledge of anatomy and histology; his work on wound infections made him a pioneer of bacteriology; he was a good musician and composer, and he enjoyed 40 years of successful married life. A man of robust figure and dominant personality, strikingly expressed in his flowing beard and piercing eyes and in the voluminous cloak and broad-brimmed hat which he habitually wore, he was a source of inspiration to hundreds of colleagues and students and to thousands of patients. He was a pioneer in many more ways than in research. He decisively rejected the forbidding bedside manner which too many of his countrymen regarded as an indispensable professional adjunct, and devoted himself to encouraging his patients before their operations and putting forth every effort to restore them afterwards to the best possible state of mind and body. His relations with his patients gave him an almost superhuman reputation, and sufferers used to drag themselves hundreds of miles to his clinic in the hope that he would cure them when every other surgeon had given them up. Their attitude was expressed in the pathetic exclamation of a mortally wounded Prussian officer when Billroth walked into the ward: "Thank God! Now I'm saved." One of his greatest services to German surgery was his instant acclamation of Lister's discovery. He sent his assistant to Edinburgh to learn the new methods at first hand, and introduced them with relentless firmness into his hospitals. He was a great writer and a great teacher, and held many famous chairs, but in 1867 he went to Vienna, which so enthralled him that even the offer of his old master Langenbeck's place could not tempt him back to Berlin. A witty contemporary said: "Austria could not have taken a finer revenge for Sadowa than to annex the best thing Prussia possessed." In spite of a critical attack of pneumonia in 1887 he lived to celebrate his twenty-fifth year as professor of surgery in Vienna, but shortly afterwards it became obvious that his heart was failing. Strength of will enabled him to remain in harness almost to the end, but towards the end of 1893 he had to retire to the Albazia, the hospital for which he had such a strong affection and which he had practically made his own, and in February of 1894 he died. The enthusiasm with which his centenary is being celebrated testifies to the universal admiration which he inspired. His unique value lay not so much in what he did as what he was.

[1] Wien. klin. Woch., April 11th, p. 457.

THE REPORT ON RADIUM.

ON March 25th, as was reported in THE LANCET at the time, Lieut.-Commander Kenworthy asked the Minister of Health whether he had received the report of the Subcommittee of the Committee of Civil Research on radium and radium supplies; and whether it was proposed to publish it in whole or in part. Sir Kingsley Wood replied: "The report has been received and will be published in full very shortly. I may add that a statement of the intentions of the Government in the matter will be made immediately on the reassembling of Parliament." It is an open secret that this announcement was received with mixed feelings by members of the medical profession, who cannot have expected that the intentions of the Government would be formulated as a result of a report the contents of which was a complete secret to them until this week, while the personnel of the authors of the report had not been made really public. Undoubtedly the presumption was that the report, in the composition of which no representatives of clinical medicine appear to have been consulted, would be submitted for deliberation, at any rate, to a duly selected list of professional leaders before Parliament was invited to act upon it, for action must be taken to follow upon intention. On Tuesday last, however, the announcement was made by the Chancellor of the Exchequer that the Government had decided to contribute £1 for £1 raised by public effort to obtain a sum of £200,000 to be expended in the purchase of radium, the employment of which, presumably, will follow the lines of the report of the Subcommittee, and on Wednesday the report became available for the public. Before the public is asked to assist in the raising of a purchase fund, there ought of course to be no question as to whether the members of the medical profession, as trustees for the proper therapeutic uses of radium, are properly satisfied as to the husbanding and allocation of the supply of radium, when obtained.

A summary of the report is published in another column, and it will be seen that the Subcommittee have covered the ground very thoroughly. The growing importance of radium as a therapeutic agent is clearly explained, and the fact emerges that since systematic studies of a comprehensive character have been undertaken in regard to the biological and curative properties of radium, the possibilities of radium surgery have been recognised to the great benefit of the world. Hence the need for obtaining a stock of radium is pressing, while an analysis of the existing supply for medical treatment in this country shows a very definite shortage. The amount of radium at present required for medical purposes in England, Scotland and Wales is calculated as being 49 g., of which it would seem 24 g. only are in our possession. The basic recommendation of the

Subcommittee is that there should be a definite aim at securing a net increase of 20 g. of radium to be available for medical purposes by the end of 1930. The market to which recourse must be had is Belgium, for the figures show that at the present time very little radium is being produced anywhere except from the Belgium Congo ore, and it is possible that the privacy in which the activities of the Subcommittee have been transacted was due to the feeling that it was important that no public surmise should influence the prices. Clearly our holding must be increased, and the proposed organisation for the distribution of a central stock of radium for medical purposes turns upon the constitution of a body of Trustees whose duty it will be to hold the funds provided by Parliament or otherwise, and to purchase therewith and hold radium for use by an expert body termed the Radium Commission; and at this point the claims of clinical medicine to be recognised are met. The National Radium Trustees include the Presidents of the two Royal Colleges, the B.M.A., and the Royal Society of Medicine, while the Radium Commission, a body of nine, will consist of four persons nominated by the Trustees, and four representatives nominated, one each by the Minister of Health, the Secretary of State for Scotland, the Medical Research Council, and the Department of Scientific and Industrial Research, with a chairman, "a distinguished public man," who, however, will not necessarily be a member of the medical profession.

Of the report of the Subcommittee there can be but one opinion—it is a clear document, packed with facts which support its recommendations. But the omission to take the medical profession into consultation before the report was made must by the members of that profession be regarded as a possible source of weakness in the future.

THE BALANCE OF POPULATION.

THE excess of live births over deaths in England and Wales during the year 1927 was only 169,563, a figure 60,000 or more below that of the three previous years. The Registrar-General, who notes this curious fact in the third part of the Statistical Review of the year which has just appeared,[1] explains the excessive drop in the natural increase of population by the conjunction of a special decrease in births and an equally fortuitous increase in deaths. The former was due largely to the abnormal decline in the number of new marriages in 1926, associated with the prolonged coal strike and the industrial disturbance of that year. The mortality of the year was not high in itself but was merely relatively so in contrast to the low record of 1926. Every cause set out in the table of causes of death shows a higher mortality for each sex in 1927 than in 1926, with the single exception of the category Old Age, a form of return which has been rapidly declining in frequency of recent years. This growing reluctance to attribute death to old age must help in some degree to account for the increase from more definite causes. Taking the various causes of death seriatim the greatest increase of 1927 as compared with 1926 is from influenza, heart disease and cancer coming next; but when comparison is made with 1921–25 the increase from influenza is naturally less outstanding, heart disease ranking first and next to it cancer. Both these rates are likely to be swollen by transfer from Old Age; heart disease as a result of the increasing record of myocardial disease on the certificates of aged persons, and cancer as a result of the increasing frequency of the disease in the old. As the Registrar-General points out, the population as a whole is gradually getting older and will continue to do so for many years to come owing to the heavy falls which have occurred in both fertility and mortality during the past half century. We must not infer, he says, that the perpetuation of current conditions of fertility and mortality will be sufficient to ensure a continuous increase in the national population.

[1] The Registrar-General's Statistical Review of England and Wales for the Year 1927. Text. H.M. Stationery Office. 1929. 5s.

TWO GIFTS TO LONDON CHILDREN.

DURING the past week London children have benefited by two generous and imaginative benefactions. Sir James Barrie has given all his rights in "Peter Pan" to the Hospital for Sick Children in Great Ormond-street, and it is estimated that the gift, which is wholly unconditional, will produce an income of something like £2000 a year. This generous action has already borne fruit, for "The First Pirate" has anonymously given a pound note in the hope that others may follow his example. The second benefaction is the offer by Lord Rothermere of £100,000 towards the purchase of the Foundling Hospital site, the option on which is to be kept open until June 30th, 1931, Lord Rothermere having made himself responsible for the annual interest on the remainder of the purchase money in the meantime. The fact that the Foundling site lies so near to the Children's Hospital made the proposal (now abandoned) to rebuild the hospital on this site seem a natural one, although it is perhaps still more fitting that the area should be kept open in perpetuity as a children's park, in accordance with the conditions laid down by Lord Rothermere, who has stipulated in addition that the park shall be placed for one month in each year at the disposal of the British Boy Scouts Association for a camping ground. Sir James Barrie's benefaction recalls a similar act of beneficence on the part of a great artist, for Handel left the score of "The Messiah" by will to the Foundling Hospital, and during his lifetime a sum of more than £10,000 was added to its funds by the annual performance of the Oratorio within the hospital on the great organ which he gave to it. The Foundling site will provide a large open space in a part of the metropolis which has stood greatly in need of one ever since Lamb's Conduit Fields were built over, after the governors of the Foundling Hospital had bought 55 acres of these fields from the Earl of Salisbury for a matter of £5500. The little green patches provided by squares and churchyards in the middle east of London, even if they were available for children's play, do not take the place of the wide areas of wilderness in the western districts, and those who are familiar with the way in which Clissold Park, a mile or two further north, is used by the dwellers in the further east who trek there and back on fine, summer afternoons, can form some conception of what the Foundling site when it is laid out will mean to the children of Agartown and Somerstown. If there is not room for ornamental water there will at least be playing fields and sandpits and possibly some small enclosures where bright-coloured fowl and cavies can rejoice the heart of the urban child.

INTERNATIONAL SURGICAL CONGRESS.

THE Eighth Triennial Congress of the International Society of Surgery will be held in Warsaw from July 22nd to 25th, when the following subjects will be discussed: The Causes and Mechanism of Post-operative Embolism; the Results of Resection of the Stomach for Gastric and Duodenal Ulcer; the Treatment of Exophthamic Goitre and the Reparative Surgery of the Hip-joint. The Society has chartered a liner of the Compagnie Générale Transatlantique for the use of members; this will leave Zeebrugge on July 12th and after calling at Ymuiden, Copenhagen, Riga, Helsingfors, Stockholm, and the Island of Gothland will arrived at Danzig on July 21st. From here Warsaw is only eight hours by rail. Messrs. Thomas Cook and Son are arranging inclusive terms for the stay in Warsaw and for the journey from London for those members who do not wish to join the preliminary cruise, with an extension to Vienna, Budapest, Prague, and Leipzig after the Congress for

those who desire it. As the hotel accommodation in Warsaw is understood to be limited early booking is desirable. The British delegate is Mr. J. E. H. Roberts (26, Harley-street, London, W. 1), to whom intending participants are invited to refer.

THE RETURN OF SEVERE SMALL-POX.

THE disembarkation from a British ship at Marseilles on March 27th of a seaman fatally ill with small-pox, and the distribution over this country of nearly 1500 possible contacts, has set the public mind again thinking of small-pox as a dangerous disease. For many months past 200–300 cases of small-pox have been notified each week from widely scattered counties in England and Wales, but only an occasional fatality has been reported, with some other contributing cause of death appearing as a rule on the death certificate. The small outbreak of 11 cases of small-pox in London two years ago, which led to six deaths, was attributed to some undisclosed case imported from abroad; and a little earlier the married couple who sickened of small-pox in its hæmorrhagic form had recently arrived from Paris. In neither of these instances was there any extension of the severe disease to the population at large, but the danger of the present situation has been accentuated by the fact that the seaman landed at Marseilles had been ill on board for ten days before the disease was recognised as small-pox, and about one-third of the passengers left the boat at Marseilles to cross France for England before any precautions had been taken to protect them from the results of possible contact. From the details given on another page it will be seen that, in spite of the extraordinary favourable opportunity offered for the development of widespread infection in a closed community on shipboard, only 42 secondary cases of small-pox have occurred, with a total to date of six deaths. All persons on board the vessel were offered vaccination or revaccination between Marseilles and Liverpool where the passengers disembarked, the crew proceeding to dock with the ship at Glasgow. At these ports the health authorities decided that the situation would be fully met by keeping them under observation during the critical period, and by the usual careful surveillance of contacts, a policy which seems to have been justified by the event. On the other hand, the health authorities in France, which relies for protection against small-pox on the principle of universal compulsory vaccination, threatened to apply this policy logically by refusing (from Thursday of this week) to admit into the country any passenger from England who was not prepared with evidence of recent vaccination. Opportunities were to be offered both on the crossing and on arrival at a French port for the traveller to comply with this regulation, while the tourist companies were to make arrangements for such through passengers as desired to avoid the regulation by travelling on the eastern side of the frontier. At the last moment the order was suspended. Recent vaccination, however, would ensure the safety of the traveller in France as well as the converse. The present position affords an interesting commentary on the need for complete international agreement as to the methods to be adopted for dealing with small-pox when, as must happen from time to time, it again presents itself in a dangerous form.

THE MICROSCOPE ON SHIPBOARD.

Dr. R. Pirot, a French surgeon lieutenant-commander, serving in China on board a gunboat of 800 tons and 110 men, tells [1] of the medical advantage he gained during his cruise from taking a microscope with him and fitting up a small laboratory on board. The diagnosis of malaria without a blood-film examination is, he truly says, impossible; clinically, the disease is often missed or identified wrongly. Again, everyone is now so anxious about venereal prophylaxis that treatment is sometimes over-active and Pirot found himself able, by examining pus-films, to decide that some chronic discharges were due to a chemical, not to a venereal, urethritis, and so to get them stopped. In other such cases, by definite recognition of the cause of very early infective discharges, he was able to start vigorous treatment at once, which without a microscope he would not have dared to do. But it was in the study of intestinal parasites he found his little laboratory most useful, as there were some 20 natives on board, of whom a third were infected with *Necator americanus*, and others with other intestinal parasites; in fact, he did 200 examinations of fæces in the year. Thus, also, he could diagnose amœbic dysentery early and begin emetine treatment forthwith, with great advantage to the patients. Altogether he did 377 examinations in the year, and wishes all to know that such a laboratory is possible even on board a small craft. Like Molière, he took his good where he could find it, wiling acetone out of the gunner, and wire (mirabile dictu) out of the wireless operator; but most of his stains came from a kindly Pasteur Institute. He is rather proud of a useful centrifuge he made out of a ventilating fan, but in his small (10 ft. by 10 ft.) laboratory, and in those climates, he must have sometimes regretted that the centrifuge was not still an electric fan. His only serious difficulty seems to have been that the ship's distilled water was not quite good enough for washing Giemsa and Romanowsky films; so, after watery eosin he stained his films with Stévenel's blue (75 c.cm. of 2 per cent. methylene-blue, and 50 c.cm. of 3 per cent. permanganate of potassium, heated together in a water-bath till the precipitate dissolved). This solution, he says, is permanent; the film need only be washed with ordinary water and gives complete differentiation to the leucocytes.

[1] Arch. de Méd. Navales, 1928, cxviii., 417.

Summer Time will commence in Great Britain, Ireland, the Channel Islands, and the Isle of Man on Sunday morning next, April 21st, at 2 A.M., when the hands of timepieces should be advanced one hour. It will end on Sunday, Oct. 6th. France makes the change at the same week-end, after which travellers need not alter their watches on crossing the eastern frontier.

DURING the Annual Meeting of the British Medical Association in Manchester an exhibition of works of art belonging to members of the profession will be held. Medical men are earnestly invited to loan pictures and works of art, and communications in respect of the exhibition should be addressed to the chairman of the Local Entertainments Committee, 33, Cross-street, Manchester.

ROYAL MEDICAL BENEVOLENT FUND.—During the first quarter of this year £2774 has been voted in grants and £1320 paid to annuitants, these figures showing an increase on the corresponding period of last year. At the recent meeting of the committee 33 grants were made, amounting to £715. The following are short notes on four of the cases helped:—

M.D., aged 76. Sight damaged by X rays in early days of long exposures. Vision of the right eye practically gone and left eye failing. Applicant was one of the earliest workers with radiology in this country. Private income £22. Freemasons have given a pension of £64, making a total income of £86. Voted £40.

M.B., aged 72. For many years has suffered from mitral disease and during the last few months has had increasing difficulty in walking and is unable to work. His savings are being exhausted. Voted £40.

Widow, aged 62, of L.R.C.S., whose husband was a ship's surgeon until his death in February. The widow has been left with no income. Her daughter is earning £130 a year and relations contribute £50, making £180 for two persons. Fund voted £36.

Daughter, aged 61, of M.R.C.S. Her father died when applicant was a child. She was trained as a nurse and supported herself through life as nurse-matron in schools. In 1928 she had a severe operation and has had to give up work. Income, £75. Rent, £26. Fund voted £26.

Subscriptions and donations should be sent to the honorary treasurer of the Fund, at 11, Chandos-street, London, W. 1.

The Clinical Interpretation of Aids to Diagnosis.

A Series of Special Articles contributed by Invitation.

XXVIII.

THE SIGNIFICANCE OF ORGANISMS IN THE URINE.

PART II.*—IDENTIFICATION OF THE ORGANISM.

THE routine laboratory examination of a specimen of urine involves the making of stained and unstained preparations from the centrifugalised deposit, the making of cultures, and, in special circumstances, the inoculation of an animal.

Technique.

At least 10 c.cm. of the specimen is centrifugalised and the deposit used for microscopic examination. An unstained preparation serves for the identification of pus, epithelium, red cells, casts, crystals, ova, and motile bacteria. For stained preparations the most satisfactory techniques for routine use are Gram's and Ziehl-Neelsen's methods. In special circumstances dark-ground illumination may be used to search for the leptospira of infective jaundice; alternatively a dried preparation may be stained by Giemsa's method. For cultivation, as a routine medium a simple litmus-lactose agar gives the most useful results in that it helps to differentiate typhoidal organisms from ordinary *B. coli*. Non-lactose fermenting coliform organisms should be identified by subculturing into suitable sugar media and, if necessary, by agglutination. A serum-agar or blood-agar medium should be used where streptococci are to be cultivated. As a routine, the cultures are incubated for 24–48 hours, but in special circumstances, such as examinations for the Brucella group (melitensis, &c.) incubation should proceed for seven days before the culture is regarded as negative.

Animal Inoculation.

Guinea-pig inoculation is performed for the detection of *B. tuberculosis* when, as is frequent, the organisms are too few in number to be detected in a Ziehl-Neelsen stained film. Provided that the specimen does not contain large numbers of pyogenic bacteria the animal is inoculated direct with about 1 c.cm. of the centrifugalised deposit. When pyogenic infection is heavy, the deposit is first treated with an equal volume of 3 per cent. caustic soda for half an hour at 37° C.; at the end of this time it is made neutral to litmus, centrifugalised, and the deposit inoculated. The caustic soda kills off pyogenic bacteria but has little or no action on tubercle bacilli (Petroff's method).

Inoculations are made in the lower part of the anterior abdominal wall, and evidence of tuberculous infection is first given by enlargement of the inguinal glands. Inoculated animals are examined from week to week for loss of weight and for glandular enlargement, and if the glands become easily palpable an autopsy may be performed without further delay. If there is no sign of glandular enlargement, the animal is allowed to live for two months before an autopsy is performed. Any tuberculous lesions are examined in smears, and if necessary, in sections, for evidence of tuberculosis; a positive result is presumptive evidence that the original specimen contained tubercle bacilli. In the average case a definite result from animal inoculation takes from 6–8 weeks to obtain. A guinea-pig may also be used to demonstrate the *Leptospira icterohæmorrhagiæ* in the urine in the later stages of infective jaundice.

* Part I., Preliminary Tests for Infection, appeared last week.

B. Coli.

B. coli pyelitis is common in women and children but is not so frequent in adult males; the finding of *B. coli* in the male is more suggestive of prostatitis or cystitis. That the appearance of the organism in the urine is often intermittent is due, in some cases, to a blocking of the ureter with débris. In children ureteric blockage causes high fever with rigors, and the most acute cases of pyelitis in infants sometimes yield negative findings until more than one examination has been made. The amount of associated pus is, to some extent, an index of the severity of the infection, and a regular quantitative estimation will show a diminution when the condition is improving. Bacilluria without cellular reaction is not uncommon; it is an extremely chronic condition and is resistant to treatment. In pyelitis the clinical condition usually shows marked improvement long before the urine ceases to contain organisms, and it may be urged that the only criterion of cure is a series of negative cultures over a long period. Even after a long period of freedom relapses or reinfections are liable to occur. The most hopeful cases for permanent cure are acute conditions in which the urine rapidly becomes sterile. Acute pyelitis is on rare occasions accompanied by profuse hæmaturia. Casts should suggest the possibility of pyonephrosis secondary to pyelitis. *B. coli* cystitis is usually secondary to pyelitis or to prostatitis. When the urine is offensive and, in addition to pus, contains a considerable amount of bladder epithelium as well as a fair quantity of mucus, cystitis should be suspected. The infection is frequently complicated by additional organisms such as streptococci and staphylococci.

Other Coliform Organisms.

Coliform organisms which for clinical purposes may all be classified as "atypical *B. coli*," are found in the urine with considerable frequency. The commonest of them is *B. proteus vulgaris* which is associated with chronic infections of the prostate, bladder, and renal pelvis. The significance of atypical organisms is apparently no more than that of ordinary *B. coli*, and conditions due to them should be treated in the same way.

Typhoidal Organisms.

Urinary carriers of typhoid and paratyphoid bacilli are not uncommon and the finding of the organism in the urine implies a renal focus of infection. The excretion of the bacilli is intermittent and may not be found by a single examination. The routine employment of litmus-lactose-agar medium sometimes identifies an unsuspected typhoid carrier. During active typhoid fever the bacilli are most commonly present in the urine from the third week onwards. It is a sound policy to insist upon three consecutive negative cultural examinations of the urine before discharging a typhoid patient as cured.

Staphylococci.

Staphylococci can always be cultivated from the urethral meatus and the first few centimetres of the urethra. Consequently staphylococci are frequent contaminants of non-catheter specimens of urine and a few may even be collected on a catheter during passage. The appearance of a few colonies of *Staphylococcus albus* on a culture medium can usually be disregarded.

Heavy staphylococcal infections are common as a sequel to the passage of an unclean catheter, as a secondary infection in genito-urinary tuberculosis, and as a superposed infection in renal or vesical calculus. Simple staphylococcal cystitis should never be regarded as a satisfactory diagnosis but should be looked upon as a direct hint to search carefully for a tuberculous lesion, for a calculus, or for a prostatic focus of infection. Staphylococcal cystitis, associated with stagnation of urine due to prostatic enlargement, results in ammoniacal decomposition of the urine. Staphylococci associated with hæmaturia and casts suggest infarction of the kidney

with an infected embolus, particularly if the organism is of the aureus variety.

Diphtheroid Bacilli.

These are meatal and urethral organisms and are not regarded in themselves as capable of producing a primary urinary infection. They are frequently found associated with a causal organism in cases of prostatitis and cystitis.

Streptococci.

The significance to be attached to the presence of streptococci depends greatly on the type of streptococcus found as well as on the clinical condition of the patient. Renal infarction in infective endocarditis results in the appearance of casts, red cells, and streptococci in the urine; it is relatively uncommon for the red cell content to be sufficient to be detected by the guaiacum test.

Apart from acute streptococcal septicæmia there is no doubt that small numbers of streptococci find their way into the blood stream in such conditions as acute tonsillitis, acute or generalised rheumatism, the early phases of broncho-pneumonia, or in heavy dental infections. The circulating organisms probably lodge as minute embolic foci in the kidney and they may be detected in cultures of the urine. The number present in the urine is usually small and there may be no other evidence of renal infection except an occasional red corpuscle. An elongated diplococcus, generally regarded as a variety of streptococcus, may be found at the urethral meatus, and is commonly present in the prostate, secondary to gonorrhœa. Cystitis may be caused by the same organism, usually in association with *B. coli*.

Gonococci.

Gonococcal cystitis is comparatively rare, particularly in males, and the presence of pus and gonococci in a non-catheter male specimen suggests urethritis or a ruptured prostatic abscess, unless the clinical symptoms point to an obvious cystitis.

Tubercle Bacilli.

Tubercle bacilli in the urine imply a tuberculous lesion of the genito-urinary tract requiring a thorough clinical examination in order to locate the exact site and extent of the disease. The question of confusion of *B. tuberculosis* with the acid-fast *B. smegmæ* is negligible and need not be considered if a catheter specimen is examined or if an acid-alcohol decolorising technique is used. The influence of early diagnosis on prognosis renders important a clear understanding of the limitations of the present bacteriological methods for detecting genito-urinary tuberculosis.

As a general rule, the appearance of tubercle bacilli in sufficient numbers to be found in a stained smear indicates an advanced lesion. It is therefore desirable to use every means for making a diagnosis before the condition has reached this stage. Earlier diagnosis may be made by guinea-pig inoculation, but even this method is not absolute, for it is estimated that from 10 to 160 living bacilli, according to virulence and type, must be inoculated into the animal before tuberculosis can be produced. Animal inoculation is thus a useful test, but is not conclusive, and it has the disadvantage of necessitating a delay which may last from 6–8 weeks. Frequency, hæmaturia, or pyuria all merit full investigation for a tuberculous focus. The most valuable and significant laboratory finding in early cases of tuberculosis of the urinary tract is an acid urine containing a small quantity of pus, with perhaps a few red cells, but with no bacteria demonstrable in films or cultures. It is not generally recognised how frequently secondary infection occurs in renal or cystic tuberculosis, and that acceptance of *B. coli* or staphylococcus as the primary infecting agent may lead to the missing of a case of tuberculosis. Whenever renal tuberculosis is suspected, it is bad policy to await a result from a bladder specimen before investigating ureteric specimens.

Other Organisms.

Adhesions with communications between the bowel and the bladder may occur with carcinoma of the rectum, with diverticulitis and with typhoidal, dysenteric, or other ulcerative conditions. In such cases the bladder becomes infected with the fæcal flora and the urine contains a large variety of bacteria, the most suggestive of which are the obvious intestinal anaerobes. *B. pyocyaneus* occurs in chronic cases of cystitis or pyelitis, but is usually secondary to some more virulent primary organism.

The urine may contain *Brucella melitensis*, *Leptospira icterohæmorrrhagiæ*, and the ova of *Bilharzia hæmatobium*, in which case the diagnosis is obvious.

LIONEL E. H. WHITBY, M.D. Camb.,
M.R.C.P. Lond.,
Bacteriologist to the Bland-Sutton Institute of Pathology, The Middlesex Hospital.

Special Articles.

THE EVOLUTION OF HOSPITAL SCHOOLS:

COMBINED TREATMENT AND EDUCATION FOR CHILDREN SUFFERING FROM PHYSICAL DEFECTS.*

BY SIR HENRY GAUVAIN, M.D., M.CHIR. CAMB., F.R.C.S. ENG.,
MEDICAL SUPERINTENDENT OF THE LORD MAYOR TRELOAR CRIPPLES' HOSPITALS AND OF THE MORLAND CLINICS, ALTON;
AND
EVELYN M. HOLMES, M.B. MANCH.,
RESIDENT MEDICAL OFFICER, MORLAND CLINICS, ALTON.

(*Concluded from p. 792.*)

THE aim of education is to give to the crippled child as many of the amenities and advantages of ordinary school life as is possible, to encourage corporate life and the happy school atmosphere, whilst by specially selected methods endeavouring to "catch up" along the lines of education in normal elementary schools.

To the normal child education is its chief asset; how much more it meant to the cripple was not realised until it was tried. In hospital schools, too, it has been found to have a definite medical value. It makes periods of rest and exercise easy to regulate and keeps the child busy, interested, and happy. If by means of these educational facilities the cripple only gains and retains confidence in his relationship with the ordinary world the effort would be worth while, for it was the feeling of his inferiority, his inability to make a success of life, as much as his sensitiveness to an unsightly complaint that so overwhelmed and distressed him. But it does more than that. It enables him to enter into and profit by training in industrial occupations and take his stand both in the social and the industrial life of the nation when the time comes. It has been estimated that even with present facilities 80–90 per cent. of crippled children passing through special schools and training institutions are found able to compete for work in the open market. From being a menace to society the cripple had become an object of charity, but now the attitude has changed again and the cripple is being accepted as an instance of civic responsibility.

The Task Before Us.

Recent figures issued by the Board of Education with regard to physically defective children are of interest in showing how great the problem is. It is estimated that there are amongst elementary schools

* A paper read before the Medical Officers of Schools Association on March 15th.

in England and Wales some 83,000 children for whom special provision should be made. Of these, according to the latest figures,[18] 65,230 are suffering from malnutrition, deformity, tuberculosis, or cardiac crippling, and the present accommodation, according to the same report, is: in open-air schools, 2078; in cripple schools, 980; and in hospital schools, 3372; leaving a residue of 58,810 of these cases still unprovided for.[19]

Special schools are now admitting, as well as a certain number of serious heart cases, a small proportion of debilitated children.

London has no residential school within its boundary; it utilises schools established by other local authorities and by philanthropic societies. Some conception of the extent of the work undertaken may be visualised when it is realised that the ambulance system for the day schools of the physically defective in London alone costs £35,000 per annum.[20]

Schooling and Treatment.

A number of residential schools for such children are now in existence, but these are not hospitals in in any sense of the word. The children are admitted to be housed and educated, not for treatment. Should any treatment of children in special schools be thought necessary, it is customary to send them into general hospitals. The orthopædic hospitals such as Heatherwood at Ascot, Mansfield at Northampton, Royal National at Portland-street and Stanmore, Treloar's at Alton, St. Nicholas at Pyrford, Shropshire at Oswestry, Wingfield at Oxford, and others provide schools with qualified teachers, and in some the organisation reaches a high point. But it is not essential that education be given in these hospitals. If the hospitals care to make suitable provision for the education of their children they may apply for certification as "special schools," under the Board of Education, and if sanctioned may also receive grants both [21] in aid of treatment and of education. Although seven new hospital schools have opened since April, 1927, the number of hospitals which receive orthopædic cases under local education authority provisions, and which do not offer educational facilities to the children, is as great as 44.[22 23] The inevitable result is that where education has not been provided this has to be "made up" to the child on discharge at much greater expense to the State.

It is now considered that not only are the great bulk of crippling defects preventable, but curable, and should the incidence of disease continue to diminish as it is doing at present, and for those children requiring treatment and capable of education the hospital school scheme be still further developed, the need for special schools as such would diminish.

Throughout the country, schemes for the detection, treatment, education, and after-care of the physically defective are ever extending. New schemes were approved by the Board of Education in 28 areas in 1927 making a total of 160,[24] but there are still 157 areas where no authoritative provision whatever has been made.[25] In practically every case the first move has been made by private individuals or voluntary associations, the local education authority stepping in afterwards and the two continuing to work in conjunction. The correlation of schemes involving various educational and health authorities, as well as voluntary associations for cripple children in the different areas and of different age-groups from infancy until the completion of their treatment and education, has been a matter of great difficulty. Much has depended on the voluntary workers. Indeed, it is the voluntary worker who has originated every advance that has taken place, for no Board of Education, or even Ministry of Health, dare take over such responsibility until its beneficial results are already a proved and certain fact. Surely this is a sound argument for the retention of our voluntary hospital system and the blending with it of State service.

In after-care work the voluntary associations are still almost wholly responsible in the matter of organisation and in finance, except for a substantial grant received by the after-care committees in the London area from the Ministry of Labour.[26]

Such work is of the greatest value. It is now for medical science to show how by taking every measure to prevent the onset of deformity, by sparing no pains to treat efficiently the crippling defects of childhood and by giving every possible educational facility to the child under treatment, the nation would be repaid for the expenditure incurred by the conversion of the cripple into a healthy, happy, and useful citizen. A national movement to complete the schemes for the physically defective throughout the country would never be regretted.

Open-air Schools.

An important movement in the interests of defective children has been the recognition of the value of open-air schools. The first of these was opened at Plumstead in 1907, others followed, and their results have been so excellent that the scheme is ever-widening and even being extended for the normal child by the provision of open-air play and class-rooms. In the last report available it is stated that there is now accommodation for 6061 pupils in day schools and 2078 in open-air schools.[27] Some of these schools have advanced to the stage of being schools where sun-treatment is combined with open-air and education. The first open-air school in London to adopt sun treatment was Stowey House, Clapham Common, and the headmaster, Mr. Green, and his assistants, are enthusiastic and convinced of its value.

The *Times* of March 13th, 1929, abstracts the 1927 report of Mr. Gater, the Education Officer of the London County Council, which commends open-air schools, and referring to one in East London states: "The garden (a former refuse dump) is surrounded by docks, factories, a railway terminus, and old houses. The garden is now maturing and provides a pleasant background, making outdoor life for the subnormal child seem really worth while. Twenty-eight boys attended an open-air class, camping out in blankets during the winter with definite physical benefit. The boys showed no wish to return to the class-rooms."

The Latest Advances.

The latest advance in schemes for the physically defective child has been the widening of the scope of hospital schools to include other forms of physical defect beyond crippling as ordinarily understood. As examples may be cited the lupus wards at the Treloar Cripple Hospital, and hospital school accommodation for cardiac cripples and other debilitated children. There is unlimited scope for further extension in this direction, and fortified by the experience of the past there is no doubt that the next few years will see great developments. The need for a comprehensive register to include all defects amongst school-children requiring skilled treatment combined with education is now called for. In addition to the various crippling conditions records are needed of all cardiac and rheumatic cases, debility, malnutrition, intractable anæmias, bronchiectasis, asthma, diabetes, and other affections. Valuable preventive work would be done by open-air hospitals for the temporary accommodation, treatment, and education of children convalescing from debilitating diseases. Already it has been demonstrated that since prolonged in-patient treatment for cardiac cases has been in vogue, wonderful results have been obtained. Dr. A. P. Thomson, medical officer to Birmingham special schools, states: "Many cardiac lesions recover to a remarkable extent and many hearts that seem damaged for life recover in time and become normal, even in older children." [28]

The importance of this subject must be our apology for the length of this paper. We would like to have described in detail the hospital schools, the treatment adopted, and the type of education offered, differing according to the social needs of the patient as well as by reason of their disabilities. One point, however,

must be emphasised. The hospital school, for whatever class of children it caters, must be in the country or at the seaside and not in a town. It must be conducted as an open-air institution to raise the metabolism and increase the vigour and physical fitness of the pupil. Intermittent sun treatment should be employed for both its effect on the mind and the body. We regard its value in evoking mental activity as at least as great as its influence on bodily defects.[29 30] Further details of treatment or education we may not pause to discuss.

For a child to derive full benefits from education, he or she should, if showing a pathological divergence from the normal, be restored as speedily and as fully to the normal as is possible, and during this process, if that is necessarily lengthy, education modified to, and planned for, his particular needs should be available. But the doctor must lead the way. The responsibility is primarily his and he will find the intelligent teacher eager and willing to coöperate if taught how. The hospital school for all classes of the community is the most urgent need of every physically defective child and is of equal or greater importance to such a child or adolescent as is the ordinary school or university to its normal pupil. During the past 20 years over 5000 physically defective children have been under the care of one of us (H. J. G.) for combined treatment and education or training. Brief notes on a few such illustrative cases will afford tangible evidence of the value of such care.

Cases from the Treloar Hospital (Elementary School Type).

A. B., a cachectic girl, admitted May, 1918, with tuberculous disease of the hip with abscess formation. Discharged September, 1920, with disease arrested, no deformity, hip fixed by fibrous ankylosis. This child was exceptionally intelligent, as is shown by the following extracts from a letter from her:—

"I think you will be interested to hear something of the career of an old patient of yours at Alton, if only because it forms a not uninteresting example of the difference which Alton may make to any individual. . . . I left in September, 1920, when almost 14 years old. When I had been at home a few months I was sent to school and placed in a form of girls of my own age, although, of course, I was far behind them. In 1925 I obtained from Southampton Girls' Grammar School the Rooper scholarship tenable at University College, Southampton. . . . In June of this year I sat for the B.Sc. (Econ.) examination of London University and obtained the only first-class honours degree given on the external examination, and was awarded the Gladstone Memorial prize. During this autumn I was given the Metcalf studentship by London University to enable me to undertake research at the London School of Economics. . . . While I am conscious that this catalogue of my achievements sounds very like self-advertisement, I am far more conscious of its being an advertisement for the good done me at Alton, and for which I shall always be grateful."

C. D., a cachectic freckled boy, aged 11. Admitted April, 1919, with cervico dorsal caries and paraplegia. Discharged February, 1921, with the disease arrested, no deformity. The boy subsequently emigrated to New Zealand, and in a recent letter writes as follows:—

"I can now do as good a day's work as anyone, harvesting or anything at all. . . . I've got a ripping horse of my own, a six-year-old bay filly, so I'm always out after deer and fish. I can ride in great style now, although my horse runs away with me now and again—she's a bit flighty."

We could give hundreds of examples of a successful and happy career following treatment. One girl sent by the late Dr. F. E. Batten with spinal caries and psoas abscess is now one of the leading lady lawn-tennis champions. Here is a case illustrating treatment and education in the hospital and training in the College.

F. G., an adolescent cripple, admitted to hospital with spinal caries and double psoas abscess, transferred when disease arrested to college for three years' training. Discharge in 1922. Subsequent history: First started work as an employee in a leather shop. Then commenced business of his own. Business fluctuated but now good, and when he last reported two months ago was employing a dozen people in his small factory, four of whom had been trained at Alton.

The training given to the lads in the College brings out most remarkably their self-reliance and resourcefulness. Though handicapped by their physical disabilities not only do they become good citizens, but extract from life pleasures from which it might be supposed they would be debarred. As an example, *Cycling* for January, 1928, reports a cyclist (an old trainee at the College) who had cycled 8308 miles in the year with only one leg, his longest day's run being 123 miles. This boy is now a successful journeyman tailor.

Cases from the Morland Clinics (Secondary and Public School Type).

H. I., a girl of 14, admitted with tuberculous disease of the dorsal spine and complete paraplegia. Treatment combined with education occupied two years. Recovery without deformity. Became head girl of her school and captain of the tennis and hockey teams. Was last seen six years after leaving school. She had that day played two rounds (18 holes each) of golf. Remains perfectly well.

J. K., spinal caries with deformity and psoas sinus. Had been recumbent for ten years. Very cachectic on admission. Sinus healed in six months. Deformity reduced and imperceptible. Treatment 15 months. Was coached for "little-go" while being treated, and entered Cambridge University. At Cambridge distinguished himself as a daring motor-cyclist racer. Graduated. Now in partnership of an important firm and displaying great business ability.

L. M., spinal caries with extreme deformity. Paraplegia and incontinence for seven years previous to admission. Cord completely destroyed as shown by laminectomy. Later excelled at archery, passed high in his tripos at Cambridge. Entering on a specialised legal career, which should be highly useful and remunerative because of his special gifts, though he necessarily remains paraplegic. Drives his own car by hand control.

In less severe cases equally valuable results may be achieved in much less time, e.g.:—

A boy, otherwise healthy, with lupus vulgaris on the forehead which had resisted all treatment. Of a naval family it was desired that he, too, should enter the Navy. Treated by Finsen light while preparing for examination. Lesion healed with satisfactory cosmetic results, was passed by doctor, and became a naval cadet. The time factor for treatment was here of special urgency.

A public school boy developed severe cervical adenitis. Admitted for treatment which occupied six months and returned to his school cured and without scarring. Meanwhile, he had been specially coached in weak subjects.

Numerous cases of girls with acquired scoliosis have been treated and meanwhile educated and enabled to return to their ordinary school.

Further examples of such cases might be multiplied almost indefinitely, but the foregoing are sufficient to demonstrate the value of combined specialised treatment and education. Numbers of physically defective boys and girls have had combined treatment and instruction enabling them to proceed to ordinary schools or universities, or, when disability has occurred during their school career, have been able, after treatment combined with education, to complete their education at their original schools or go direct to the university with their disabilities rectified and with the minimum disturbance of their education. The importance to these children of education during treatment will be readily appreciated.

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20. Hill, A.: The Cripple, October, 1928, p. 43.
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22. Ibid., p. 178.
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29. Gauvain, H. J.: The Effect of Heliotherapy and Artificial Light Treatment on the Mentality of Patients, Maternity and Child Welfare, July, 1925.
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LOCAL GOVERNMENT ACT, 1929.

THE FIRST CIRCULAR TO LOCAL AUTHORITIES.

IN addressing to local authorities the first circular [1] on the subject of the Local Government Act, 1929, which became law on March 27th, the Minister of Health makes some general observations on the content and significance of the Act as a whole.

The Transfer of Poor-law Work to Local Authorities.

The most far-reaching change is the transfer to the responsible local authorities of the work which for nearly a century has been organised under a distinctive name and under separate legislation by the poor-law authorities. The transfer will have its most significant effect in bringing about a new situation under which the local authorities—

1. Are made responsible for vaccination;
2. Are made responsible for infant life protection;
3. Are made responsible for the collection of the fundamental vital statistics; and
4. Are made responsible, severally or jointly, for the provision, maintenance, and management of all public institutions for the cure or mitigation of physical or mental disease.

Under the last head there pass to county borough councils and (subject to local arrangements as to management) to county councils, many thousands of beds for sick and mentally infirm patients in separate infirmaries and other institutions; and it must be remembered, in conjunction with this transfer, that security is taken for the proper provision in future of beds for infectious diseases for the inhabitants of every county area either by one of the authorities (the county or district council) for the area, or by some other authority who have beds to let on agreed terms.

At the same time the vital importance of retaining the personal touch in the administration of poor relief finds recognition by the provision made in the Act for guardians committees in county areas, doing the actual work of relief locally in close contact with the recipients of relief, and being constituted to a defined extent of members of the county district councils.

The New Organisation of Poor-law and Public Health Work.

By the transfer to them of the responsibility of poor-law authorities for the treatment of the sick poor in institutions, in conjunction with the enlarged powers now conferred upon them to provide hospital accommodation for all types of cases, and to organise properly the provision and use of infectious diseases hospitals, local authorities are placed for the first time in a position to survey the whole of the public hospitals in their areas, and to use them to the best advantage in the light of the principles which Mr. Chamberlain summarised as follows in moving the second reading of the Bill:—

"The whole trend of practice in modern medicine and surgery is towards the treatment of many cases in institutions, where there can be accumulated the specialised equipment and specialised skill which are not always available in private homes. When this Bill becomes law we shall have a position in which there will be one single health authority in each area whose duty and function it will be to survey the whole institutional needs of that area. They will have at their disposal all the institutions which are now in the hands of the guardians, in many of which the accommodation is not fully occupied. They will have an opportunity of reclassifying their institutions, of closing such as are no longer suitable for modern requirements at all, of altering and adapting others and using one for one purpose and another for another purpose. Even to-day there is a certain amount of classification attempted in many of the institutions of the guardians, particularly in the large areas, but I think it must be clear to everybody that, with the small numbers that are to be found of each particular kind of case in any particular institution, it is quite impossible either to get the sort of classification that you want, or to bring to it that equipment and that specially skilled staff and nursing which is essential if you are to get the best results."

Local authorities are required by the Act, in preparing administrative schemes for carrying out the work in relation to the provision and use of public hospitals, and the other work, transferred to them from poor-law authorities, to have regard to the desirability of securing that, as soon as circumstances permit, any assistance which can lawfully be provided otherwise than by way of poor-law relief shall be provided exclusively by virtue of the several Acts specified in Section 5. A clear direction is thereby given that the process known for the last 20 years as the break-up of the poor-law shall be put in hand in a practical manner and carried so far as the existing law and the prevailing circumstances allow.

Further amendments of the law directed to this end are not, of course, excluded or rendered more difficult by this provision, but certain criticisms were made in Parliament during discussion of the matter on the two points (1) why the law governing the relief of the poor (as distinct from the responsibility for administering that law) should not first be transformed before being transferred to new authorities to administer; and (2) why the process conveniently termed the break-up of the poor-law should not be made compulsory upon all the new authorities at once.

In reply to criticism on the first point Mr. Chamberlain has expressed the view that any question of the amendment of the law under which poor relief is provided can more profitably be discussed and determined after the new authorities have had a reasonable opportunity of familiarising themselves both with the statute law as it stands in the consolidating Poor Law Act of 1927, and with the subordinate legislation bearing on the transferred work, and of considering their powers and obligations in this new sphere in the light of their general experience of local administration.

In meeting criticism on the second point, Mr. Chamberlain has thought it reasonable to urge not only that a direction to local authorities to use their alternative powers of giving assistance always, and at once, in one manner only, would be out of harmony with the basic principle of the Act that the responsibility of authorities for the conduct of local affairs should be respected and enlarged; but also that such a direction, if given, must, in some areas at least, be disregarded, because the accommodation in institutions at the disposal of the authorities in the first instance, even after the transfer to them of poor-law work, will not suffice to enable them in every case to provide assistance which takes the form of institutional treatment except by way of poor relief.

The Future of Public Health Work in Counties.

After more than 50 years of discussion and unsatisfactory progress, definite provision is made to secure to every county district council at the earliest possible moment the services of a medical officer of health whose attention will be concentrated upon public duties. The inhabitants of the poorer parishes and districts are for the first time afforded the alternative possibilities either of securing the acceptance by others of a share of any undue burden which the cost of providing themselves with a water-supply or sewerage would impose; or even, in the last resort, of arranging that the management of services such as these shall be concentrated in the hands of county councils, if that course is found most advantageous in practice to health and well-being. Full facilities are afforded under the Act for preventing dispersal of money and effort intended for the welfare of mothers and children in the several parts of any county, by concentrating work directed to that end in the hands of those authorities who are in a position to undertake, if not the whole, at least some substantial portion, of the services which go together to form the basis for systematic arrangements of this nature (notification of births, provision for maternity

[1] General Circular on the Local Government Act, 1929. No. 1000. H.M. Stationery Office. 3*d*.

and child welfare, school medical work, and supervision of midwives).

Consultation between Local Authorities and Local Bodies representing Voluntary Hospitals.

In many areas the guardians have, in the exercise of their duties under the poor-law, provided separate infirmaries which in some areas are already equipped up to the same level as the voluntary hospitals of the area, and in others are rapidly approaching that level. To an increasing extent admission to these infirmaries has been provided on repayment terms for members of the community who cannot be said to be destitute otherwise than to the extent that they have need of expert medical assistance, cannot afford to obtain it in a nursing home, and cannot obtain immediate or early admittance to a voluntary hospital. In any area in which a poor-law institution of this type is to be transferred to the local authority, whether the local authority do or do not make a declaration under Section 5 of the Act, the problem of finding means of coöperation with the voluntary hospitals in the area obviously arises, and it will also certainly arise in other areas where the provision of a self-contained public hospital by way of poor relief or otherwise, or the expansion of existing buildings on hospital lines, is a matter requiring consideration in the interest of the inhabitants.

The provisions of Section 13 of the Act secure that by consultation between the local authorities and local bodies representing voluntary hospitals the provision and use of hospital accommodation in every area is not achieved to the accompaniment of any unnecessary and wasteful competition between public and voluntary bodies. It will accordingly be incumbent upon the council of every county and county borough, when making provision for hospital accommodation in discharge of the functions transferred to them from poor-law authorities, to consult such committee or other body as they consider to represent both the governing bodies and the medical and surgical staffs of the voluntary hospitals providing services in, or for the benefit of, the county or county borough, as to the accommodation to be provided, and as to the purposes for which it is to be used.

Mr. Chamberlain, it is stated, attributes the greatest importance to the proper carrying out of this section. In making the necessary institutional provision for the health of the people, it is imperative that local authorities should establish the most cordial relations with, and should make the fullest use of the accumulated skill and experience of, the medical profession in regard to hospitals.

The last sentence of the circular reads: "It is the confident hope and expectation of the Minister that as procedure under Section 13 becomes established and regular, it may lead to wider arrangements for the fullest consultation between the local authority and the medical profession, not merely in regard to institutional accommodation and its use, but also in regard to those numerous developments in the health provision of the people which are implicit in the new organisation laid down by the Act."

MEDICINE AND THE LAW.

Liability for Notification of Birth.

A PARENT was fined at Mortlake police-court on April 10th for having failed to notify the birth of a child last December to the medical officer of health for Barnes. The liability arises under the Notification of Births Act, 1907, originally an adoptive statute, but made to apply generally throughout Great Britain in 1915. This Act is an addition to the other statutory requirements for birth registration. It makes it the duty of the father of a newly-born child, if he actually resides in the house where birth takes place at the time of its occurrence, to send written notification to the medical officer of health within 36 hours. The Act says that the local authority is to supply stamped addressed postcards free of charge to any medical practitioner or midwife practising in that area who applies for them. The wording of the statute is somewhat vague. After setting forth the duty of the father, the Act says the same duty is imposed on "any person in attendance upon the mother at the time of or within six hours after the birth." As is suggested in "The Conduct of Medical Practice," the intention must be to make the father primarily liable (provided he is actually living in the house when birth occurs), the medical practitioner being liable (qua person in attendance) if the father defaults. It is advisable for the doctor to bear in mind his responsibility to notify (*a*) if the father is absent from home, or (*b*) if the father has failed in his duty. It is a good defence under the statute if either father or doctor "satisfies the court that he has reasonable grounds to believe that notice has been duly given by some other person." That was the father's attempted defence at the recent proceedings at Mortlake; he said he thought the doctor had made the notification "as was generally the case"; he had himself been ill at the time owing to a motor accident; and the child had died shortly afterwards. The clerk to the Barnes District Council pressed for the maximum penalty of 20*s*.; he said that the father had been written to on the subject several times and that, as the council had had several similar cases recently, it was decided to prosecute in order to make an example of him. The bench imposed a fine of 5*s*. with 6*s*. costs, which seems to show that the magistrates did not take a very grave view of the offence.

Medical Inspectors in Divorce Cases.

In Stroud *v.* Stroud otherwise Grantham, recently reported in the *Solicitors' Journal*, a decision was given on the method of appointing medical practitioners to examine parties concerned in matrimonial causes at assizes. It may be remembered that in 1920 Parliament allowed divorce cases to be tried at assizes instead of in the divorce court in the London law courts. This has undoubtedly lightened the work of the court in London; it has also proved economical because the parties and witnesses can attend for trial nearer their own homes. Under the Poor Persons Rules (Order XXXVA of the Rules of the Supreme Court) a "poor person" can begin his action under the Matrimonial Causes Acts in a district registry instead of in London. One such case, in which there was an undefended petition for nullity of marriage on the ground of the wife's impotence, was tried at Lewes Assizes last December. The District Registrar appointed two local doctors practising at Eastbourne to examine the parties and report to the court. These two practitioners were not on the official rota of medical inspectors for the Divorce Division and, although the case was in other respects free from difficulty, Mr. Justice Rowlatt postponed the drawing up of the decree nisi until after he had heard argument on the question of the District Registrar's authority to appoint practitioners outside the rota. In February the point was argued. The petitioner had to support the action of the district registrar on which the evidence for the decree had been based. It was argued on his behalf that the court's matrimonial jurisdiction was historically ecclesiastical in origin; the appointment of medical inspectors, according to the former ecclesiastical practice, would be a matter for the registrar; under the Poor Persons Rules, where a matrimonial cause is begun in a district registry, the district registrar is deemed to have the powers of a registrar in the Divorce Registry in London. The Judicature Acts have of course modernised the legal system considerably; but both Section 23 of the 1873 Act and Section 32 of the 1925 Act (which consolidated the previous enactments) declare that, when no special provision to the contrary is to be found in the statute or in rules of court, any jurisdiction is to be exercised as nearly as possible in the same manner as by the court to which it formerly appertained. Mr. Justice Rowlatt accepted the argument and held that the

district registrar had had full power to appoint the practitioners who acted as medical inspectors.

Swab Left in Patient's Body.

At a recent inquest at Llanidloes it appeared that the deceased had undergone an operation at Ebbw Vale Hospital last December, and, having gone to Llanidloes for convalescence and still feeling ill, had been operated upon again at Llanidloes Hospital. Dr. Milwyn Burrell, who performed the second operation on March 21st, before the patient's death, described the finding of a large pack or swab in the abdomen. He considered death was due to ulceration of the intestines from irritation caused by the swab. Asked if he regarded himself as responsible for counting all instruments and swabs at an operation, Dr. Burrell replied that the surgeon could not do this; he must leave it to someone else; the common practice was to leave it to the theatre sister. It was, he said, the surgeon's duty before closing the wound to inquire if all instruments and swabs are accounted for. Dr. John Dunlop, of Abercarn, who performed the operation in December, described the operation and said he removed all the swabs he could see. Dr. James Sullivan, who was assisting, asked: "Are all the swabs out?" and the answer "yes" was given; he did not know by whom. Dr. Dunlop said he then closed the wound; he thought the patient's heavy breathing might have sucked in the swab and in the necessary hurry this one had been overlooked. The matron of the Ebbw Vale Hospital described what was done at the first operation. The jury found that death was due to a swab being negligently left in the patient's abdomen at the operation in December, but they added their opinion that the negligence was not of a criminal nature.

IRELAND.

(FROM OUR OWN CORRESPONDENT.)

Public Health in the Free State.

THE vote for the Department of Local Government and Public Health, which was taken in the Dail last week, gave deputies an opportunity to criticise the work of the department. In proposing the vote of £302,556, the Minister said that there was an increase of £59,915 for housing. There was a slight decrease for other services. The contribution for social services amounted to £106,396, including maternity and child welfare work, medical treatment, meals for school-children, and treatment of tuberculosis. The department had no reason to be dissatisfied with the appointment of medical officers of health, who were now being appointed in many counties. He had before him a draft Bill dealing with the reports of the Poor-law Commission and the National Health Insurance Committees, but he was not in a position to say when these Bills would be presented to the House.

Mr. S. O'Kelly, in moving that the estimates be referred back, said that there was not enough money available for the requisite social services. The infant mortality in Dublin was 118 per 1000, and something should be done to remedy that. Dr. O'Dowd drew attention to a grave outbreak of enteric at Carrick-on-Shannon, due, he suggested, to contaminated water-supply. Sir James Craig urged that there should be a Minister, or at least a Parliamentary Secretary, for public health, who had had a medical training. He said that the sanitary condition of some of the small towns and villages was deplorable. He asked what progress had been made in the medical inspection and treatment of school-children. Mr. O'Reilly called attention to the malnutrition exhibited by many school-children, and to the lack of sanitation and water-supply in towns and villages where fairs were held. Dr. Tubridy spoke of the need for improved housing in rural as well as urban areas, and complained of the unsuitability and lack of equipment of rural dispensary premises. Dr. Hennessy suggested that the importance given to a knowledge of the Irish language led to the appointment of relatively inferior medical officers. They should see that the best doctor was appointed, irrespective of any language. He agreed that in an Irish-speaking district a doctor should know Irish to discharge his duties efficiently. Nevertheless, too much attention should not be paid to language. "Veterinary surgeons were notorious for making accurate diagnoses of their cases, and they did so without conversation with their patients."

The Minister, Mr. R. Mulcahy, in reply, deplored the lack of public education in the country in regard to sanitary matters. He expressed some doubt as to whether the grants given to mental hospitals might not be more usefully employed in some other service which got more closely to the root of the prevention of disease. The vote was carried.

BERLIN.

(FROM OUR OWN CORRESPONDENT.)

Syphilitic Infection of a Pathologist.

AN assistant pathologist at a municipal hospital contracted syphilis as a result of making a post-mortem examination of a child who had died from the disease. He therefore brought an action for damages against the city and the chief pathologist. In support of his plea that there is danger of syphilitic infection at autopsies he quoted cases from the literature, and he claimed that the city was under an obligation to protect the dissecting staff against infection. It was the rule in other pathological institutes, he said, to wear rubber gloves and he had repeatedly asked the chief pathologist for permission to do so. The chief pathologist, however, had always denied that syphilis could be transmitted by dissection and had mocked at the idea of prosectors using gloves. Although he had not actually prohibited the wearing of gloves he had by his conduct made it almost impossible for his inferior to use them. By saying, moreover, that cases of syphilitic infection at post-mortem examination had hitherto neither occurred nor been reported, and by diagnosing the plaintiff's chancre as an ordinary post-mortem tubercle, thus causing a delay in the use of antisyphilitic treatment, the chief pathologist had impaired his assistant's health and had acted negligently. The city authorities had been guilty of great negligence, too, in not providing satisfactory gloves. Only after the accident had new gloves been furnished.

The defendant said that he had not at all prohibited the use of rubber gloves which had always been at the disposal of his assistant. According to many pathologists dissecting with gloves was sometimes more dangerous than without. The plaintiff had shown his injury to him only a month after the dissection, and being a medical man he ought to have ascertained the nature of the disease himself.

By an injunction the defendants were ordered to pay the plaintiff 600 M. (£30) a month, but on appeal this decision was quashed. In judgment it was stated that in the expert opinion of several pathologists syphilitic infection from this cause was extremely rare and wearing of gloves did not give absolute protection. The chief pathologist had made no order prohibiting the wearing of gloves, and the plaintiff had been very careless in not consulting a medical man from the beginning, relying instead on the opinion of his chief, whom he knew not to be a practitioner. The chief pathologist and the city were thus held not responsible for the accident and its sequels.

The Use of the Soya Bean.

Germany has to pay an enormous sum of money every year for the importation of products destined directly or indirectly for food, and especially for proteins and fat. Dr. Oppenheimer therefore urges the advantages of the soya bean, which is cultivated, especially in Manchuria, as a source of food. A meal prepared from the bean contains 45 per cent. of protein and 22·4 per cent. of fat, and thus has four

times more protein than wheat flour and 20 per cent. more calories. It is the cheapest available form of food. Instead of importing meat, eggs, milk, and cheese at a cost of 700 million marks Germany could get the same amount of protein and fat by importing 400,000 tons of soya bean at one-seventh of the cost. Soya meal may be used for making puddings, bread, and cheese, and also may be added to the ordinary rye bread to make it richer in protein. The difficulty would be that the workman not only wants to eat, but also to see, smell, and taste his food, and therefore it is highly probable that he would eat soya bread sandwiches with fat from America and sausage made from pigs fed with corn from the Argentine, thus making useless the importation of soya as a substitute for these products. Soya bean might, however, be of great value in cases of urgency where a population has to be saved from starvation, and for poor people's kitchens and the like.

Hypervitaminosis.

Prof. R. Fischl and Dr. B. Epstein [1] report experiments on the effect of a preparation of irradiated ergosterol (vigantol) on rabbits. They point out that hypervitaminosis has been observed after the indiscriminate use of this substance, manifesting itself by disorders of the myocardium, kidneys, and other organs. To ascertain the effect of irradiated ergosterol on healthy rabbits they administered five drops of vigantol oil twice daily to three rabbits 3 months old. One of the rabbits died after five days, showing on dissection a calcification of the vessels and of other organs. The second rabbit died after 15 days, with severe emaciation and an intensive sclerosis of the ascending aorta and the vena cava. The third rabbit died after a month and had an enormous swelling of the liver with disseminated foci of cartilaginous consistence. Microscopical investigation proved that there was necrosis and calcification of the parenchyma without parasitic invasion. While rabbits are very sensitive to vigantol guinea-pigs have a relatively high tolerance. It follows from these experiments, however, that vigantol is not an innocuous remedy in large doses, but has a powerful action in mobilising calcareous substances in various organs. It may lead to severe morbid conditions endangering life. Rabbits with rickets do not stand administration of the preparation better than healthy animals. Although the results of the experiments cannot be applied without reserve to the human species they must lead to a cautious administration of irradiated ergosterol. Fischl and Epstein declare that from their experience in the Pædiatric Clinic of Prague University they have not formed so high an opinion of the prophylactic and therapeutic value of vigantol as have other authors. They think that the time has not yet come for allowing its general use.

How to Keep Young.

Prof. Fürbringer, former chief physician to the Friedrichshain Municipal Hospital at Berlin, gives rules for prolonging life based on his own experience. Physical exercise he regards as very healthy; at the age of 80 he continues to indulge in a walk of 10–20 kilometres twice a week, and still climbs in the Alps, swims in summer, and skates in winter. He has reluctantly given up cycling on account of the street traffic in Berlin. Muscular over-exertion, however, must be avoided; whilst food should be poor in fat and salt, and he disapproves of the consumption of much milk. Abstinence from spirits and tobacco is, he thinks, unnecessary, and he prefers temperance. To the soundness of his advice Dr. Fürbringer is himself a testimony, for he is still in practice and regularly attends the meetings of the medical and other societies where he often takes part in the discussions.

Prophylaxis of Whooping-cough.

Dr. Bernuth, of the Pædiatric Clinic of the University of Jena, has experimented on the prevention of whooping-cough by means of a vaccine made from the Bordet-Gengou bacillus. The preparation is sold under the name of tuscosan in ampullæ of 1·0 c.cm., containing doses of 25 to 350 million organisms. The injections are made at intervals of three to four days, and Bernuth says that local rashes are rarely observed and usually disappear within a short time. In five of seven cases in which whooping-cough was imported into the clinic a spread of the disease among other children was avoided. Of 70 inoculated children who came in contact with the patients suffering from whooping-cough only four infants of a few months' old caught the disease. The vaccination is effective for a short time only, infection being possible again some months afterwards. It is desirable to vaccinate as early as possible, but if inoculation fails to prevent the disease it is said to modify the severity of the symptoms.

[1] Med. Klin., 1929, xxv., 21.

The Liberal Professions and Unemployment Insurance.

As a result of a resolution adopted in Parliament the Minister of Labour has made inquiries whether it is necessary to include the liberal professions under the insurance against unemployment. Among other bodies he has approached the Hartmann-Bund to ascertain their opinion, and they have answered that there is no need for the medical profession to be included in the unemployment insurance. The profession, they point out, is not a trade-union, but a free profession which has organised, and will continue to organise, the support of its members in cases of necessity without official interference.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg.-Comdr. T. W. Jeffery is placed on the retd. list with the rank of Surg. Capt.

ROYAL ARMY MEDICAL CORPS.

Maj. J. R. Yourell retires on retd. pay.

Lt. on prob. D. C. MacE. Macpherson resigns his commn.

S. W. Gabbe to be Temp. Lt.

ARMY DENTAL CORPS.

Capt. A. T. Madin to be Maj.

ARMY RESERVE OF OFFICERS.

Lt.-Col. W. C. Croly, having attained the age limit of liability to recall, ceases to belong to the Res. of Off.

SUPPLEMENTARY RESERVE OF OFFICERS.

Lt. J. V. Dockray to be Capt.

TERRITORIAL ARMY.

Capts. H. V. Walsh and K. Pretty to be Majs.; M. De Lacey to be Lt.

Supernumerary for Service with O.T.C.: Capt. V. C. Pennell resigns his commn. and is regranted the rank of Capt.

ROYAL AIR FORCE.

A. P. Atkins (temp. Lt. General List, Army, Dental Surgeon) is granted a temp. commn. as a Flying Officer (Dental) on attachment to the R.A.F.

BRITISH MEDICAL ASSOCIATION: AN ART EXHIBITION.—By the kindness of the Salford Corporation it has been made possible to arrange for an art exhibition to be held at the Salford Art Gallery in Peel Park, during the Annual Meeting of the British Medical Association in Manchester. It is proposed that this exhibition should consist of works of art (painting, sculpture, china, and other results of artistic production), either belonging to or executed by members of the profession, or having a special medical interest or association. The Executive Committee will be glad to hear at an early date from any member willing to loan, or influence the loan of, any such work of art. The Salford Corporation have undertaken the insurance and transport free of cost to the lender, the only condition being that objects lent must be left on view for two months. All communications on this subject should be addressed to the chairman, Local Entertainments Committee, B.M.A. Annual Meeting, 33, Cross-street, Manchester.

Correspondence.

"Audi alteram partem."

THE "PHYSIOTHERAPY CLINIC" AND THE PRACTITIONER.

To the Editor of THE LANCET.

SIR,—The relationship between the practitioner on the one hand, and the establishment which provides physiotherapy or the medical man who specialises in this branch of treatment on the other, would appear to be somewhat ambiguous. With the expected increase in the number of such institutions as well as of medical men who devote their attention to this work, the position may well become a little strained. If the difficulties that have arisen, and may still arise, could be ventilated, a useful purpose might be served and the ethical situation become more clearly defined.

The position, as I see it, is much as follows: A practitioner sees a patient and decides that some form of physical treatment is necessary. Having none of the necessary apparatus at his disposal, he has either to send his patient to some institution which provides the requisite treatment or to a colleague who practises in one or other of these branches. In the first case the establishment selected may be run by some unqualified person who may or may not profess to confine his or her activities solely to patients recommended by a medical practitioner. In such an institution there may be no medical supervision of any sort and the patient is left entirely to the tender mercies of a half-trained or ignorant attendant. On the other hand, from the practitioner's point of view, there are advantages, in that he is not likely to lose his patient because he naturally exercises a certain amount of supervision during the course of the treatment. In such an institution the fees are apt to be lower because the services of a qualified man have not to be allowed for in fixing the amount of remuneration demanded by the proprietor of the establishment. If an institution, under medical supervision is selected, the fees are naturally higher and patients of limited means are liable to feel that there is no necessity to pay two doctors where one would do. The consequence is, that the practitioner who sends the patient sees very little more of him.

Then, again, there is a very decided prejudice on the part of many practitioners against having their prescriptions for physical treatment criticised by another doctor who by a look or a word may convey to the patient the impression that their particular doctor knows very little about the subject. Of course, it will be at once urged that such a thing cannot happen between professional colleagues. It does, however, and I venture to suggest that such a possibility is largely responsible for the success of many institutions that have no medical supervision. Of course, there are certain procedures that can only be satisfactorily carried out by a qualified medical practitioner who possesses special knowledge—e.g., X ray work and the applications of radium. Such work should never be left to unqualified persons, and for the practitioner who sends the patient to give instructions as to dosage would be entirely superfluous if not presumptuous. If I write a prescription for a bottle of medicine, I should consider it an intolerable proceeding if the pharmacist who dispenses it showed it to another medical man, and asked his opinion as to its suitability. Surely it should be possible to so arrange matters that medical men may be enabled to send their patients for treatment to institutions where their instructions will be carried out exactly as they are intended, without comment.

Take, for instance, the spas of this country. I know of no case where there is any medical supervision of a bathing establishment. The local practitioners send their patients to the baths for treatment and can rely on the written instructions being accurately carried out. The patient reports to his doctor at intervals during the course of treatment and the prescription is modified from time to time as occasion requires. I contend therefore very strongly that such provision for the supply of physical treatment should be made with regard to the large towns. Of course, I quite realise that in institutions where a definite claim is made for the treatment of certain diseases an adequate medical staff is absolutely essential. Patients are sent to such establishments for a definite purpose. They are sent by their doctors for the fullest investigation and treatment. The medical staff must of necessity have a free hand, and any outside interference would entirely defeat the objects of the institution.

Coming now to the question of the relationship between medical men who specialise in physiotherapy and their professional brethren, the position is difficult. The difficulty is mainly financial. Should the physiotherapist charge consultant's fees? If he does, someone is going to suffer besides the patient, and it is easy to guess who that someone is likely to be. At any rate, it will not be the specialist. The position teems with difficulties. If the patient is sent for an opinion as to the best form of treatment advisable, then the usual consultant's fees are obviously allowable. If a patient of limited means consults me and I consider that a course, say, of diathermy is indicated, I naturally hesitate before sending him or her to a professional colleague, who every time the treatment is given will demand much the same fee that I would for a consultation. I look around for some means of saving my patient's pocket, and if I send him to an unqualified person I expose myself at once to the charge of encouraging irregular practitioners.

Some solution should be found for what appears to me to be a difficult situation.

I am, Sir, yours faithfully,

MATTHEW B. RAY.

Bentinck-street, W., April 10th, 1929.

THE EMPLOYMENT OF BACTERIA IN MODERN WARFARE.

To the Editor of THE LANCET.

SIR,—I cannot help thinking that it would be more gracious if we were all to accept unreservedly the reassurance of our German colleagues in regard to the alleged employment by them of bacteria as a weapon on the Western Front. After all, an entry in an historical work is not really "evidence," and the best historians are fallible. To me it has always seemed impossible to believe that the German Staff, with their high scientific acumen, could have been so shortsighted as to employ a weapon as likely to be lethal to their own troops as to ours. The trench rats did not regard "no man's land" as a boundary. I would go further and suggest that the passage quoted by Lord Moynihan may itself have been inadvertently inexact. In 1917 the late Prof. Adrian Stokes (then in charge of a mobile laboratory) examined a dead rat with enlarged glands. He isolated a bacillus like that of plague. An expert was sent from Boulogne who said it was not in the least like plague, but next day returned and said he was uncertain. The specimens were sent to the Pasteur Institute, where they were reported as indistinguishable from plague. Can this incident have provided the basis for the story quoted? I was intimately associated with Adrian Stokes then and later, but I never heard it suggested that the rat in question was dropped from a balloon. Finally, no British army authority, bacteriological or administrative, has come forward to supply such details as might endow the passage quoted by Lord Moynihan-

with something approaching scientific accuracy. Without such details I, for one, could not associate myself with Lord Moynihan's unseasonable verdict.

I am, Sir, yours faithfully,

Wimpole-street, W., April 12th, 1929. J. A. RYLE.

To the Editor of THE LANCET.

SIR,—Lord Moynihan very rightly assumes that Prof. Pfeiffer and Prof. Prausnitz are competent "to listen dispassionately to evidence, to examine it critically and to give a true verdict." The evidence he asks them to consider is the isolation at a British field laboratory of *plague-like* bacilli from material dropped by a German balloon in January, 1918. One would have thought it unnecessary to point out to Lord Moynihan that no dispassionate bacteriologist would attach the slightest importance to this evidence without very material amplification. Has he further information regarding this plague-like bacillus, the circumstances of its isolation, and particularly of the material from which it came? Was it really *B. pestis*? The gulf between plague-like and plague bacilli may be a narrow one to Lord Moynihan. To the expert it is a gaping chasm.

I am, Sir, yours faithfully,

J. C. G. LEDINGHAM.

Lister Institute, London, S.W., April 13th, 1929.

To the Editor of THE LANCET.

SIR,—I have read with much regret Lord Moynihan's letter under the above title in your last issue. I am afraid it may mislead a section of the public into the belief that it has been proved that the Germans attempted to infect the allied armies with cultures of virulent bacteria during the recent war. The reiteration of this charge clearly suggests that the probable alternatives are either that the Germans did actually attempt to infect the allied armies with plague or that the bacteriological work done in mobile laboratories was not reliable. As I was for four years in charge of a mobile laboratory and for some time actually in the Fifth Army, I wish to make some observations on the meaning of the record in the History of the Great War to which reference has been made.

It is stated that "bacilli resembling the plague bacillus" were found in material dropped from a German balloon, but there is no further record on the subject; this surely means that bacilli resembling the plague bacillus were found and that further investigation showed that they were not identical with the plague bacillus. It is not conceivable that the bacteria found in this material were actually proved to be plague bacilli and that it was considered so trivial a matter that no further notice was taken of it and that the bacteriologists in charge of other mobile laboratories were not even informed about it. Since, however, it would seem that the phrase in the History may be misunderstood it will be as well to analyse briefly its meaning:—

1. The finding of bacteria in material dropped from a German balloon, since bacteria are ubiquitous; this has no significance, unless it is that the material had not been specially sterilised by heat or other means before it was dropped. 2. The resemblance of the bacteria found to plague bacilli; this presumably means that the bacteria belonged to the Pasteurella group, one which includes the plague bacillus as well as many others responsible for diseases of animals and birds which are not transmissible to man.

There were many bacteriologists with the British forces who had had practical experience of isolating the bacillus of plague, but all had not had this experience; especially was this so in the case of those whose experience had been gained in inland towns in Great Britain. A competent observer meeting a problem of this kind for the first time would conclude that with book knowledge only as his guide he was liable to err in differentiating between the plague bacillus and others in the group which resemble it, and therefore rightly render a guarded report. Whether this is the explanation for the cautious report quoted or absence at the time of facilities for experiments by inoculation I do not know; but it is quite clear that the report is merely an indication to the R.A.M.C. authorities responsible that the matter required further investigation. The suggestion that the bacilli found might be plague bacilli, standing as it does without confirmation, has no significance at all.

It is unfortunate that this particular passage in the History of the Great War should have been picked out for so much publicity.

I am, Sir, yours faithfully,

Leeds, April 14th, 1929. JAMES WALTER MCLEOD.

AN OVERDOSE OF THALLIUM ACETATE.

To the Editor of THE LANCET.

SIR,—There have been so many mistakes and discrepancies in the press reports of the inquest on the three boys, who died from an overdose of thallium acetate, that I would like to state the plain facts of the case.

The strength of the solution should have been 7·8 mg. per fluid drachm, and was based on a prescription handed to the hospital dispenser about two years ago. The prescription was written in the Hospital Pharmacopœia and it has always been understood that the solution sent up from the dispensary would be that strength. Acting on this assumption, the correct volume of the medicine was measured out so that each child should receive a dose of 8·5 mg. per kilo of body-weight. Unfortunately the solution was not correct, a decimal point had been misplaced, and each child received ten times too much. Instead of 8·5 mg. per kilo, 85 mg. per kilo were actually given.

A further point which was not made clear was that, on analysis, the solution from the small bottle "B" was only 5·6 and not 10 times too strong. This is accounted for by the fact that after the children had received their medicine from the larger bottle "A," only about one ounce of the solution was left in the bottle, and on being returned to the dispensary, it was emptied out into the smaller bottle "B," which already contained about one ounce of the solution left over from a previous occasion, and which was, of course, the correct strength.

One further remark I would like to comment on. In one paper I am stated to have admitted that one of the cases to whom I had administered the same medicine had afterwards gone off into a "trance." What I really said was that in all the series of cases we had treated only one reported having slight transient pains, and these did not occur until a week had elapsed after taking the medicine.

I am, Sir, yours faithfully,

J. M. SPENCER SCOVELL, M.D., Ch.B. Edin.

London, W., April 15th, 1929.

BLOOD STANDARDS.

To the Editor of THE LANCET.

SIR,—All clinical pathologists will be glad that attention has been drawn in your columns to the marked variations both in the so-called standard of hæmoglobin content and in the readings of instruments by which this is sought to be determined. Fortunately, however, no experienced pathologist would think either of diagnosing or excluding pernicious anæmia on the colour, index alone—that is, without a careful histological examination of stained films and an estimation of the comparative size of the red cells.

Still, in secondary anæmia, especially where repeated estimations of hæmoglobin are required with a view to determining the effect of treatment, the variation in the standards is much too high. This point has troubled me for some years. The Dare instrument is so steeply graduated as to make a high personal error almost inevitable, and it has the grave disadvantage

that it is useless when the hæmoglobin reading is very low. The various dilution methods (Sahli, Haldane, and so forth) are, as Dr. Jenkins points out, set to an arbitrary and variable standard. I have, however, found the Tallquist scale useful, provided that the effect of tint (as opposed to tone) is excluded by making the reading monochromatic. For this purpose a piece of pale green glass is sufficient. Both the variations in the colour perception of different observers and the differences in tint between old and fresh supplies of blood are thereby excluded. I have had before me three Tallquist scales of German, Italian, and alleged British origin respectively, which differ very much in colour, and there is evidently no uniformity in this respect amongst the products of different firms. When read through a green glass, however, the difference is not sufficiently great to invalidate the method for clinical purposes.

The subject of hæmoglobin values was discussed at length in the proceedings of the weekly staff meetings of the Mayo Clinic (Sept. 15th, 1926), when the Dare and dilution methods were controlled by spectrophotometric determinations and by the Van Slyke oxygen capacity test. The variations disclosed were enormous. It is to be hoped that work on the lines of the Mayo Clinic procedure may result in the production of an accepted hæmoglobin standard and an accurate method for its determination. Till then I submit that the Tallquist scale with a neutral tint reading is the best that can be employed in clinical practice.

I am, Sir, yours faithfully,

A. KNYVETT GORDON.

Bedford-square, W.C., April 15th, 1929.

PULMONARY NEOPLASMS.

To the Editor of THE LANCET.

SIR,—Dr. T. C. Hunt's paper on this subject in your last issue contains many points of interest, especially concerning the initial symptomatology and diagnosis of the primary carcinoma of the lung.

In an investigation of 62 cases particular attention was paid to the clinical pathology of 29 which came under observation at the Royal Chest Hospital, and the findings seem to show that the negative results invariably reported in the literature are due to insufficiently thorough examination. Cough and pain are early and cardinal symptoms of the disease, and the sputum or pleural fluid (which is nearly always the cause of the first pain) is worth investigation. Blood in the sputum is much more common than the text-books allow, but it may only occur intermittently or in small quantities, and is probably often omitted from hospital records. Specimens examined microscopically at the Royal Chest Hospital have been found to contain blood which was invisible to the naked eye. At this hospital 18 patients had hæmorrhagic sputum; 5 had little or no expectoration, leaving only 6 with no note of bleeding. The presence of carcinoma cells is of some interest in clinching a clinical diagnosis. Very rarely a fragment of growth is coughed up and available for section. One patient here did this three times and on one occasion the piece was large enough nearly to choke her. Isolated malignant cells are always difficult to identify, but after having studied the sputum in a few cases of pulmonary carcinoma, I think that with more experience they will be recognised more frequently than heretofore. In two recent cases the examination of the sputum revealed carcinoma cells while the clinical diagnosis was still doubtful. The procedure is simple and takes no longer than looking for tubercle bacilli in a series of specimens. Search must be made on several occasions and at least two portions of the same specimen examined. I simply make a wet preparation stained with thionin blue and examine at once. The observations are too few to enlarge at present on the nature of the cells and naturally many controls are necessary.

Dr. Hunt refers to the frequency of pleurisy as a complication of pulmonary tumours, but his figures do not bring out the fact that it is a *constant* feature of the condition; they presumably refer to the clinical diagnosis and not to the total incidence as revealed post mortem. Out of 29 post-mortems at the Royal Chest Hospital every case showed extensive pleural adhesions. In 13 there was also a large effusion of clear or cloudy fluid; in 4 the fluid was hæmorrhagic, in 5 it was purulent, and in 8 there was invasion of the pleura by new growth.

I have not found that the large cell sometimes called "foulis" is pathognomonic of pulmonary tumour. The same pale vacuolated cell is found in other forms of pleural effusion and it has no resemblance to the malignant cells obtained if a pleural nodule is scraped. The only certain test of carcinoma in pleural fluid is the presence of columnar or spindle cells, and this is uncommon. Binucleate cells or plaques of endothelial cells forming rosettes indicate a lesion of the pleura not necessarily malignant, and are found in inflammatory conditions. A hæmorrhagic fluid is very suggestive of carcinoma but occurs in only about a quarter of the cases and the diagnosis cannot depend upon its presence.

I am, Sir, yours faithfully,

NORAH H. SCHUSTER, M.B., Ch.B.

Royal Chest Hospital, City-road, E.C., April 15th, 1929.

THE ÆTIOLOGY OF UROLITHIASIS.

To the Editor of THE LANCET.

SIR,—Having read with interest Dr. Clifford Hoyle's instructive article in your issue of April 6th (p. 734) I think his suggestion as to the ætiology of urolithiasis in tropical countries is based on a fallacy. It appears to me that Europeans in the tropics suffer through over-protection from ultra-violet rays. Most of the solar radiation is absorbed in the clothing, where it is converted into heat and conducted to the body with enervating effect, the skin beneath remaining absolutely white. Fear of insolation leads to the covering of the head and shading of the face, so that the majority of the Europeans have pale faces. Urolithiasis in the tropics appears to me likely to be the result of excessive sweating and therefore high concentration of the urine. In any case, when we consider that two ounces of cholesterol contain only one grain of ergosterol it is hardly conceivable that a toxic dose of vitamin D could arise from the irradiation of the face and hands alone.

I am, Sir, yours faithfully,

G. MURRAY LEVICK.

Harley-street, W., April 15th, 1929.

ACTIVE IMMUNISATION AND DIPHTHERIA.

To the Editor of THE LANCET.

SIR,—Dr. Goodall expresses the opinion that the suspicious cases of "local diphtheria," referred to in our paper, should have been counted as cases arising in 1928 subsequent to prophylactic inoculation. His letter is evidence that these cases should have been included, since it was politic to avoid any "attempt to gloss over a failure." Our phrase "suggested a diagnosis" is admittedly unsatisfactory since, when used by an expert of Dr. Goodall's unrivalled experience, it conveys a much higher probability that the patient is suffering from the clinical entity "suggested," than when used by someone with only the same amount of experience as (say) myself.

The subject of the diagnosis of these doubtful cases is of great scientific interest, but much too lengthy to discuss here. I hope my attitude with regard to them will be more intelligible when the full report of this Greenwich work is published. Dr. Goodall asks: Would these local cases, which were excluded from the 1928 diphtheria notifications, have been notified if they had arisen in unimmunised boys? Prior to 1922 the answer is, Yes. Since that date, as more and more confidence was gained in the reliability of the Schick test, both as a diagnostic and prognostic instrument,

it has gradually become the local custom, for practical purposes, not to diagnose doubtful cases with no marked malaise and negative Schick tests as diphtheria, even in cases where virulent *C. diphtheriæ* are demonstrated on culture. This is the best routine for the special environment in question, even should its biological basis be proved unsound. Since the school was immunised, only the two cases Dr. Goodall mentions come into this category, and I do not think that they were either severe enough or numerous enough to vitiate the conclusions which were reached on the value of the alleged prophylactic inoculations. A further three and a half months have passed since the report under discussion was written, and no other definite, doubtful, or "local" types of diphtheria have come under observation.

Dr. May and I are grateful to Dr. Goodall for putting his finger on the weak spot in our paper, considered as propaganda, but it is difficult always to avoid making dogmatic statements or expressing unorthodox opinions in a preliminary note on a complex investigation.

I am, Sir, yours faithfully,

SHELDON F. DUDLEY.

R.N. College, Greenwich, April 13th, 1929.

URÆMIA SIMULATING ACUTE INTESTINAL OBSTRUCTION.

To the Editor of THE LANCET.

SIR,—An account of a case of uræmia simulating acute intestinal obstruction was given in your issue of Jan. 19th (p. 128) by Dr. Leslie Cole. The more carefully I read through it the more I thought the case to be rather one of intestinal obstruction simulating uræmia. Again in your issue of Feb. 23rd (p. 416) under the same heading Dr. Leslie Smith and Mr. Kenneth Heritage described a case of definite organic obstruction of the bowel with symptoms of uræmia—namely, coma and abnormal increase of blood-urea. Dr. Cole's case had only impacted fæces obstructing the bowel without any kink, band, or the like, and regular catheterisation led to the fall of urea content of blood. With the exception of this and of the high urea content there was hardly any sign of uræmia; the high urea content could easily be explained by the intestinal obstruction without entertaining the hypothesis of uræmia, and the fall of urea attributed to catheterisation might have taken place without it. Both these are clearly cases of intestinal obstruction with some symptoms (if at all) of uræmia and not uræmia with symptoms of obstruction of the gut, as the heading would have us believe.

An interesting suggestion is made by Dr. Smith and Mr. Heritage that the increase in the blood-urea is due to active hyperfunction of the liver resulting in the formation of a larger amount of urea from the toxic intermediate products of proteids absorbed from the obstructed gut, but in pyloric obstruction with vomiting blood-urea may increase, obviously without such absorption taking place to explain the hyperfunction, and the formation of the larger amount of urea. A more plausible explanation which I have read somewhere would be that in prolonged vomiting or in intestinal obstruction there is less water absorbed, resulting in increased concentration of urea in the blood. This theory is only more plausible than that of liver hyperfunction, but not very satisfactory. To accept it means to pronounce discredit to the healthy kidneys' capacity to maintain the composition of blood, in conditions of lessened water absorption from the gut, by secreting a smaller quantity of concentrated urine, which allows urea to pass out and retains more water in the blood, preventing increased concentration of the urea in it.

Beaumont and Dodds, in "Recent Advances in Medicine," mention the occurrence of nitrogen retention in the blood in certain abdominal conditions, and also suggest the simple and efficient means of diagnosis of such condition from renal defect causing nitrogen retention by estimating urea in urine. In neither of the cases of uræmia simulating intestinal obstruction the urea of the urine seems to have been estimated which might otherwise have shown the raised blood-urea to be due to some extrarenal cause. Beaumont and Dodds, however, do not, as far as I know, point out in that book the cause of nitrogen retention in the abdominal conditions. I wish they could be induced to let us know what they think best explains the high blood-urea figure in intestinal obstruction or other acute abdominal condition.

I am, Sir, yours faithfully,

G. B. MANKAD, M.D. Bom.

Ahmedabad, India, March 26th, 1929.

THE DANGEROUS DRUGS REGULATIONS.

To the Editor of THE LANCET.

SIR,—The recent case in the coroner's court in which a motor-bus driver caused the death of two pedestrians owing to a temporary feeling of dizziness while he was at the wheel, forcibly draws attention to the stupidity of the present regulations under the Dangerous Drugs Acts. The driver confessed to having taken 28 drops of chlorodyne on an empty stomach to cure a cold and lost control of his vehicle while under the influence of the drug.

There can be few members of the medical profession who have not found the recent regulations with regard to heroin and cocaine when prescribed, even in the minutest of doses, both annoying and vexatious, and it seems astonishing that morphia should not have been included. If we are to write elaborate prescriptions for the quite irrecoverable amounts of heroin in the simple cough mixtures, linctuses, and lozenges that have given relief for so many years, it seems stupid that we are not bound to do so for the more dangerous drug morphia. That this is a sop to the patent medicine trade is quite obvious, but, at the same time, when morphia in the form of chlorodyne can be bought freely and be taken in sufficiently large doses by the general public as to endanger the lives of others, it is time equally drastic regulations were made for its use.

Most chemists know of customers who come frequently to buy chlorodyne in quantities far above their normal requirements, and there is no doubt that it is abused by morphiomaniacs. Several of my patients who for years had been getting simple heroin or cocaine lozenges and found that these prescriptions were useless after Jan. 1st, expressed the opinion that these regulations were made by the medical profession in order to obtain more consultations. The injustice of the accusation was palpable but difficult to explain away when one of them pointed out that it is still possible to obtain opium-bearing medicines without a prescription.

I am, Sir, yours faithfully,

C. BERKELEY WAY, M.B., B.S. Lond.

Finchley-road, N.W., April 13th, 1929.

CIVIC PRESENTATION TO A MEDICAL MAN.—Lieut.-Colonel Edwin Goodall, medical superintendent of the Whitchurch Mental Hospital, Cardiff, was presented by the Lord Mayor of that city, Alderman W. R. Williams, on April 8th, with an illuminated address from the council on his retirement after 23 years' service. Tributes to the good work which Dr. Goodall had done at the mental hospital were made by several members of the council and the appreciation of the corporation and citizens was emphasised. Mention was made of the fact that when Dr. Goodall was medical superintendent of the Joint Counties Asylum at Carmarthen he had mastered the Welsh language in order to be able to get into closer touch with Welsh patients. In his reply the recipient expressed his pride in being so long associated with a city that had been progressive enough to anticipate coming changes in organisation for the treatment of mental disease by establishing an out-patient clinic in connexion with the Royal Infirmary, while provision had been made for a department of nervous and mental diseases at the hospital now being erected at Llandough. Dr. Goodall and his colleague, Dr. H. A. Scholberg, were afterwards the guests of the Lord Mayor at luncheon in the City Hall.

Public Health Services.

AN OUTBREAK OF IMPORTED SMALL-POX.

A SEVERE type of small-pox has reached this country by sea from India. On March 27th a seaman was landed at Marseilles from an Anchor Line steamship and died the same day from small-pox which had not, it is stated, been recognised as such up to the time he was admitted to the French hospital. The steamship was the *Tuscania* which left Bombay on March 14th, after a stay of a week or more in that port, with a total complement of nearly 1000. Some 200 of the passengers left the liner at Marseilles on March 27th and travelled direct to London or elsewhere, the majority remaining on board as far as Liverpool. The seaman who was landed and died at Marseilles had, it appears, been ill from March 17th, and on March 18th another member of the crew fell ill but was not landed at Marseilles. On arrival at Liverpool, however, on April 1st he was removed to hospital along with several contacts. As soon as possible after leaving Marseilles every person on board (including about 200 children) was vaccinated, or revaccinated, with the least possible delay. On reaching Liverpool some 650 passengers disembarked, information being sent by the port authorities to the districts to which they were stated to be proceeding. Several passengers subsequently proceeded on the vessel to Glasgow, where the crew were disembarked. The authorities at Liverpool also informed the local authorities of the destination (as far as known) of the 200 persons who left the ship at Marseilles and travelled overland.

The Ministry of Health states that the central and local health departments in this country are proceeding on the customary lines in regard to notification, isolation, and disinfection, keeping contacts as far as possible under supervision. It was, however, anticipated that a number of secondary cases would occur in persons who had not been adequately vaccinated before their contact with the infection. Up to the time the official statement was issued on Saturday last some 35 cases of this imported infection were notified in London and elsewhere, among whom five deaths occurred. Later reports indicate that two more members of the crew fell ill in Glasgow, one seriously, and a mild case of small-pox was reported from Keighley in a member of the ship's orchestra. No fresh case among the *Tuscania* contacts has been reported to the Metropolitan Asylums Board this week. As we go to press the figures stand at 42 secondary cases with 6 deaths.

A GUIDE TO MEDICAL INSURANCE PRACTICE.

MEDICAL insurance practice has a tendency to grow more and more complicated as the years go by; with amending Acts and new regulations the maze thickens, and there is a correspondingly greater need for elucidation and guidance of the insurance practitioner. It might be just possible for him to sort them out from a mass of papers issued by the Ministry of Health through the Stationery Office, but this unfruitful labour has been rendered superfluous by the combined work of a (late) assistant secretary in the Ministry and a barrister-at-law. The first edition of "Medical Insurance Practice," by Mr. R. W. Harris and Mr. L. Shoeten Sack, appeared six years ago,[1] and received immediate acceptance as a compendium at once authoritative and readable. The third edition, which has just been issued by the British Medical Association (price 3*s.*), and has received the approval of the National Insurance Defence Trust, has been brought fully up to date in matter and format. The first three chapters deal with the relationship of the insurance practitioner to the insurance committee on the one hand, and the insured person on the other; marginal references to later chapters furnish a ready means of reference to points of difficulty as they may arise. Next are set out the practitioner's duties towards insured persons who are on other doctors' lists or who have not chosen a doctor at all. The definitions of sudden emergency and availability are discussed at useful length. The next chapter explains how the list of insured persons for whom a practitioner is responsible is limited to a certain number fixed by the allocation subcommittee. Then follow the responsibilities and duties of deputies, and assistants and partners. Chapter VII. reviews the range of general practitioner treatment; decisions are quoted on cases regarded as within/without the scope of medical benefit. The obligation to visit and the providing of anæsthetics is gone into well and fully; the cases in which a fee may/may not be charged are defined. The question of prescribing leads on to the compilation of the National Formulary. A whole chapter is devoted to the difficult question of certification, examples being given of the irregularities which have been dealt with in official decisions. The record cards are described, and their purpose is clearly shown in a separate section. An important chapter is devoted to the regional scheme and the relations of practitioners to the regional medical officers. The basis of remuneration is fully explained, with the constitution of the various funds. The investigation of complaints, and the method of appeal to the Minister is next dealt with, and finally the disciplinary action which may be taken by the Minister is described. In addition, there are many valuable appendices.

The book, as we noted on its first appearance, makes a pleasant appeal to the medical reader by addressing him or her in the second person, and when emphasis is needed it is laid by means of black type more elegant than the italics of former editions. The conversational style conceals, but does not impair, the legal precision of what may be regarded as an essential guide for the insurance practitioner in the proper conduct of his practice.

[1] See THE LANCET, 1922, ii., 982.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED APRIL 6TH, 1929.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 273 (last week 323); scarlet fever, 1801; diphtheria, 1011; enteric fever, 43; pneumonia, 2158 (last week 2425); puerperal fever, 34; puerperal pyrexia, 112; cerebro-spinal fever, 13; acute poliomyelitis, 7; acute polio-encephalitis, 1; encephalitis lethargica, 24; dysentery, 6; ophthalmia neonatorum, 88. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the Metropolitan Asylums Board on April 9th–10th was as follows: Small-pox, 162 under treatment, 10 under observation (last week 163 and 6 respectively); scarlet fever, 1554; diphtheria, 1795; enteric fever, 12; measles, 96; whooping-cough, 1209; puerperal fever, 24 (plus 6 babies); encephalitis lethargica, 81; poliomyelitis, 4; "other diseases," 61. At St. Margaret's Hospital there were 12 babies (plus 7 mothers) with ophthalmia neonatorum.

Deaths.—In the aggregate of great towns, including London, there was 1 death from small-pox, 2 (0) from enteric fever, 56 (3) from measles, 5 (1) from scarlet fever, 154 (54) from whooping-cough, 29 (5) from diphtheria, 57 (16) from diarrhœa and enteritis under two years, and 328 (48) from influenza.

The death provisionally classified to small-pox was assigned to West Ham. Great towns reporting ten or more deaths from influenza were Birmingham, 21; Bradford and Sheffield, 10 each. Birmingham and Liverpool each reported 10 deaths from measles, West Bromwich 7. Whooping-cough deaths are still widely distributed, with the highest figures reported from Birmingham, 11; Manchester, 8; Liverpool, 7; West Ham and Hull, each 6. No great town reported more than 5 deaths from diarrhœa, Manchester alone having as many.

The number of stillbirths reported during the week was 296 (corresponding to a rate of 44 per 1000 births), including 45 in London.

THE SUPPLY OF RADIUM.

OFFICIAL PROPOSALS AND RECOMMENDATIONS.

THE Report[1] of the Radium Subcommittee of the Committee of Civil Research, appointed in July, 1928, has now been issued. The subcommittee, which was charged to examine the radium requirements of Great Britain in relation to the present sources of supply and to submit recommendations, consisted of the following persons:—

Lord Rayleigh (chairman); Sir Sydney Chapman, Chief Economic Adviser to H.M. Government; Mr. H. L. F. Fraser, Assistant Secretary, Department of Health for Scotland; Sir Walter Fletcher, Secretary, Medical Research Council; Lieutenant-General Sir Webb Gillman, Master-General of the Ordnance, War Office; Mr. J. F. N. Green, Assistant Secretary, Colonial Office; Mr. M. Heseltine, Assistant Secretary, Ministry of Health; Sir Thomas Holland, Director, Geological Survey of India, 1903–1909; Sir George Newman, Chief Medical Officer, Ministry of Health; Sir Robert Robertson, Government Chemist; Sir Ernest Rutherford, President of the Royal Society; Mr. H. T. Tizard, Secretary, Department of Scientific and Industrial Research; with Mr. A. F. Hemming (Assistant Secretary to the Committee of Civil Research), as Secretary.

The Report starts with a clear summary of the position to which radium has now attained in medical treatment, the conclusion being come to that the best radium practice in Great Britain is now as good as that in any country. This view is substantiated by a reference to the technical methods elaborated for the treatment of cancer by radium in almost every region of the body except the stomach, and adopted for application either in greatly improved ways or following new devices. "Of the various forms of cancer," the Report here runs, "for which radium has been tried, none affords a more striking example than cancer of the womb." The number of women who died of this form of cancer in 1926 is quoted as 4409, and, says the Report, "there can be little doubt that if there had existed an adequate supply of radium in this country available for medical treatment, the lives of many of these women might have been prolonged, and much suffering avoided."

Supply and Demand.

The Report goes on to analyse the existing supply of radium available for treatment in Great Britain and the methods adopted for its distribution. The Medical Research Council hold the equivalent of approximately 2·4 grammes of radium element, the bulk of which is distributed on loan to hospitals which have submitted approved schemes of research, a fraction only being allocated for purposes of experiment. An important fraction is retained centrally at the Middlesex Hospital as a source of supply of radium emanation (radon), the expenses of this radon centre being defrayed by a grant from the British Empire Cancer Campaign. An estimate is added of the amount of radium possessed by other institutions than those subsidised by the Medical Research Council and by private practitioners, and of the private radium stock in Scotland. It is shown, then, that the total available from all sources in Great Britain is approximately 24·9 grammes, of which 22·7 grammes are distributed unevenly over England and Wales, and 2·2 grammes are held in Scotland. The estimated need for the country is 50 grammes.

The sources of radium production in the world are stated with a caution as to the difficulty of making a trustworthy estimate; at the present time very little radium is being produced anywhere except in Belgium where the Belgian Congo ore is treated.

The attempt to arrive at the cost of production placed before the Subcommittee some very complex problems, and as the existence of new sources become indicated, in the British Empire and elsewhere, it may be possible to produce radium later in commercial quantities at an economic price. But time must elapse before this contingency arises, and in the meanwhile any considerable addition to the stock of radium available for medical purposes in this country will have to be derived from the Belgian producers. For this object a body of National Trustees will be appointed (see below), and it is suggested that if purchases can be made through a single agency it might be possible to buy at a substantially lower figure than the present retail price of £12 a milligramme.

Summary of Conclusions.

The Subcommittee summarise their conclusions as follows:—

(1) Knowledge of the biological and curative properties of radium for the treatment of cancer and of the technique of its application has advanced very rapidly in recent years and has greatly increased, and is likely still further to increase, the amount of radium required for medical purposes in Great Britain.

(2) The amount of radium belonging to the Government which is available for medical purposes in England, Scotland and Wales is 2·2 grammes, and the estimated amount believed to be the property of hospitals and private medical practitioners, or likely so to be in (say) three months' time, is approximately 22·7 grammes, making a total of 24·9 (or say 25) grammes.

(3) The amount required to meet existing needs in Great Britain is probably approximately 49 or 50 grammes—i.e., an immediate addition of about 24 grammes to the existing national stock is required.

(4) Owing to the lack of trained personnel and to the inadequacy of the available hospital accommodation it is probable that not more than 20 additional grammes of radium could be effectively absorbed for medical purposes by the end of 1930.

(5) Full advantage can be obtained from a given quantity of radium only when it is constantly in application—i.e., when it can be transferred from one patient to another with a minimum of delay. Such conditions are only to be found in centres possessing the necessary specialist personnel, technical equipment, and available beds.

(6) There is at present no common policy between the hospitals in acquiring radium, hospitals buying such quantities as the resources at their disposal or local munificence render possible, with the result that existing private stocks of radium have been acquired for particular localities without reference to the needs of the country as a whole.

(7) There exists a pressing need for the establishment of a central stock of radium and the organisation of some systematic method for its distribution.

(8) Until sources of supply at present unproved or unknown are discovered in the Empire or elsewhere, the only source from which additional supplies of radium for medical purposes is obtainable in any quantity is the Belgian Congo.

(9) If an organisation such as that referred to in (7) above was established it should be possible for it to obtain radium for substantially less than the existing market price, as it would be in a position to arrange large purchases spread over a considerable period.

(10) Such an organisation should also be given powers not only to purchase radium for its own purposes but also to act, when so requested, as a buying agent for hospitals and other institutions in this country or for Dominion or Colonial Governments.

(11) The amount of radium required by the Government for the Fighting Services and for use in physical research is relatively so small that it would be a mistake to require that additional radium needed for these purposes should be bought through the agency of any organisation that may be established for medical purposes.

Recommendations.

In the light of these conclusions, the Subcommittee submit the following recommendations in regard to the medical use of radium for the consideration of the Committee of Civil Research:—

(1) Steps should be taken at once to ensure the acquisition by instalments of 20 additional grammes of radium element for medical purposes.

(2) A body of Trustees should be appointed entitled the National Radium Trustees, whose duty it should be to hold the funds provided by Parliament or otherwise, and to purchase therewith and hold radium for use by the Radium Commission referred to in (4) below.

(3) The National Radium Trustees should consist of the following persons:—

The Lord President of the Council, the Minister of Health, the Secretary of State for Scotland, the President of the Royal Society, the President of the Royal College of Physicians of London, the President of the Royal College of Surgeons of England, the Chairman of the Central Liaison

[1] H.M. Stationery Office. Cmd. 3303. 6*d*.

Committee of Voluntary Hospitals in Scotland, the President of the Royal Society of Medicine, the President of the British Medical Association, and two members to be coöpted, if subsequently so desired, by the National Radium Trustees.

(4) The National Radium Trustees should appoint a body to be called "The Radium Commission," who should have the following powers and duties:—

Generally to deal with the custody, distribution and use of all radium held by the Trustees, having regard to the advancement of knowledge, the treatment of the sick, and economy of use; and, in particular, to consider and approve plans submitted to them for the use of radium for the purposes of medical treatment and research, and to make the necessary arrangements for the supply of radium for such uses.

(5) The Radium Commission should consist of the following nine persons:—

(*a*) A Chairman, who should be a distinguished public man, not necessarily a member of the medical profession, nominated by the National Radium Trustees;

(*b*) Four persons nominated by the National Radium Trustees;

(*c*) Four representatives nominated one each by the Minister of Health, the Secretary of State for Scotland, the Medical Research Council, and the Department of Scientific and Industrial Research.

(6) Members of the Radium Commission should be appointed for a period not exceeding four years, and should be eligible for reappointment after an interval of one year, the Chairman being eligible for immediate reappointment.

(7) The Radium Commission should make arrangements with the National Physical Laboratory for:—

(*a*) The custody of the radium put at the disposal of the Commission by the National Radium Trustees when such radium is not actually in use for medical purposes;

(*b*) Its preparation in form for use;

(*c*) Its recovery from such preparation on return from loan.

HOSPITALS IN THE UNITED STATES OF AMERICA.

A RECORD OF PROGRESS.

TWELVE months ago the American Medical Association, through the hospital number of its *Journal*, published its first list of all the hospitals in the United States which conform to its standards. Through the same medium it has now issued its second list, which shows an addition of 45 to the number of recognised institutions, and a total increased capacity of 39,616 beds and 1350 cots. The essentials for admission to the Register, as laid down by the Association, are few in number, but sufficient to ensure efficiency. Every member of the medical staff and every visiting physician must be a graduate of a reputable medical school, and there must always be a competent physician-pathologist either on the staff or easily accessible, who must keep careful records. Full histories and records of every patient admitted must be kept, and it is required that staff conferences, at least monthly, but preferably weekly, should be held where there are staffs of three or more for consultation upon difficult cases, and discussion of the causes of death in fatal cases. Other essentials are "able management" and a sufficient number of nurses, and no hospital must be conducted for profit. When the list was first compiled 462 hospitals and sanatoriums were excluded because they failed in some serious respect to reach the standard.

There are now in the United States 6852 hospitals of all kinds, and in the last 20 years the number of beds has grown by an annual average of 25,000. The total of beds and cots (called in America "bassinets") is 936,247. This gives one bed for every 270 persons, as compared with one for 340 as recently as 1920. The best proportion of population to beds is in Wisconsin, where it is as high as 154. The most backward State, from the hospital point of view, is South Carolina, with one bed to every 749 persons, but it is explained that all the backward States are rapidly being levelled up. The beds in the 5619 "hospitals for community use" had an average rate of occupancy of 69 per cent. Not the least curious fact that emerges from the mass of statistics compiled by the Council of Medical Education and Hospitals is the progressive decline in the number of maternity hospitals which have steadily fallen from 262 in 1923 to 164 in 1928. The explanation is that the general hospitals are growing in favour for maternity work, and last year rather more than 88 per cent. of all the babies born in hospitals were born in general institutions. This percentage represents nearly three-quarters of a million births. Many institutions definitely classed as maternity hospitals are, however, doing a considerable amount of other work. Very much more than half the total number of beds in the American hospitals are in what are there called "Government" institutions, which means institutions owned or controlled federally, or by States, counties, and cities. In so vast a territory as the United States any considerable provision of hospital facilities by the Central Government is obviously impracticable, and it is therefore natural that hospitals run by States should provide the majority of the beds. But with over 1000 hospitals and more than 114,000 beds, the institutions provided by the various religious bodies make a remarkable showing. These hospitals, however, derive some part of their income from other than their own denominational resources, and are consequently unable to confine their ministrations to adherents to their own forms of faith. For the first time a list is given of hospitals in the territorial possessions of the United States. They number 229, with a capacity of 20,650 beds and cots; 87 of these hospitals, with 10,884 beds, are in the Philippine Islands.

In a note on the educational functions of the hospitals it is pointed out that since 1914 the number of medical college graduates taking a "general internship," or fifth year in medicine, has almost doubled, while the quality of the training has far outstripped the numerical gain, thanks to the introduction of a regular curriculum of teaching and practice in most of the large general hospitals. This improvement is due to the action of the American Medical Association, which in 1914 took medical education seriously in hand as, later on, it created a definite ethical and professional standard for hospitals of all descriptions.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

THE BUDGET.

The House of Commons reassembled on Monday, April 15th, after the Easter recess. Mr. CHURCHILL, the Chancellor of the Exchequer, made his annual Budget statement. In the course of his speech Mr. Churchill announced that the existing duties on tea would be repealed from April 22nd. The railway passenger duty would be repealed as from April 1st last. A reduction of one-fourth from Oct. 1st would be made in the excise duties on liquor retailers' on-licences for spirits, beer, &c., subject to a reduced minimum duty. Off-licence holders are to be free to sell half bottles of spirits. Relief to agricultural property from rating will begin this month instead of in October. Increased licence duties are to be imposed on brewers for sale, distillers, and tobacco manufacturers in order to counteract their relief under the de-rating scheme. The duty of 30*s.* is to apply to motor-cycles up to 224 lb. weight instead of 200 lb. A reduction from £40 to £35 of duty will be allowed for goods vehicles from 2 to 2½ tons, with rebate of 20 per cent. for those fitted wholly with pneumatic tyres. An extension of telephone call offices is provided for at rural post offices and railway stations. An extra grant of 15 per cent. will be made towards road schemes on which half the workers come from depressed areas.

HOUSE OF COMMONS.

MONDAY, APRIL 15TH.

Small-pox on "Tuscania."

Lieut.-Colonel FREMANTLE asked the Minister of Health if he would state the numbers respectively of the crew of the s.s. *Tuscania* on her recent voyage from Bombay to

Liverpool and of the passengers landed; whether al the passengers and crew were under observation; what number of cases of small-pox had occurred amongst them; what was the number and vaccination history of the cases that had died; and whether any cases of small-pox had been notified from contacts with such passengers and crew.—Sir K. WOOD (Parliamentary Secretary to the Ministry of Health) replied: My hon. and gallant friend will have seen the statement on this case issued by my department and published in the newspapers on Saturday, and at present my right hon. friend is not in a position to make any further statement.

Mr. T. JOHNSTON asked the Secretary of State for Scotland whether he was aware that a member of the crew of the s.s. *Tuscania* was discharged at Marseilles; whether subsequently a wireless message was received from Marseilles intimating that the man had died of small-pox; whether on arrival at Liverpool the other members of the crew were taken to hospital for small-pox; whether on arrival at Glasgow, and before fumigation or disinfection of the ship, an engineer along with 23 cases of chickens and seven barrels of ducks were transferred to the s.s. *Caledonia*, which sailed for New York on April 7th; whether the Transport Workers' Union informed the port medical authorities of the transfer of the engineer and the foodstuffs from the infected ship prior to the sailing of the *Caledonia*; why nothing was done to prohibit this proceeding; whether 40 bags of flour had since been transferred from the infected vessel to the s.s. *California*, and whether he was in a position to assure the House that all proper steps were being taken to prevent a spread of the infection.—Sir J. GILMOUR replied: I have been unable, in the time available, to obtain information on the detailed matters referred to in this question. I am, however, making inquiries and will communicate the result to the hon. Member after these have been completed. I am satisfied that all reasonable steps are being taken by the competent authorities in Scotland to deal with the position and to protect the interests of the public.

Mr. Johnston asked whether Dr. MacGregor, who was in charge of the health department in Glasgow, had sent any wireless messages to the *Caledonia*, and what the purport of the messages were?

Sir J. GILMOUR said that that was one of the points he could not answer.

Sir R. THOMAS: Is the right hon. gentleman aware that the best medical supervision in the world is obtainable at the Liverpool Docks?

No reply was given to this question.

White Women and Coloured Seamen a Cardiff.

Sir ROBERT THOMAS asked the Home Secretary whether he had now decided to take action as a result of the facts revealed some months ago in the report of the chief constable of Cardiff regarding the association of white women with Asiatic and coloured seamen in the dock district, and, if so, along what lines.—Lieut.-Colonel Sir V. HENDERSON (Under Secretary to the Home Office) replied: The problem is not a new one, and I do not think that any immediate and complete solution of it is possible. As my right hon. friend indicated in reply to a question on Jan. 28th last, certain possibilities are being investigated, but I should prefer not to specify them at present.

League of Nations and Radium Supplies.

Commander BELLAIRS asked the Minister of Health whether the whole of the report of the research committee on the world's radium supplies would be brought before the League of Nations as a matter of international concern.—Sir KINGSLEY WOOD replied: The report of the subcommittee of the Committee on Civil Research is being published, and the point raised by my hon. and gallant friend will be considered in due course.

Birth- and Death-rates in Bengal.

Mr. DAY asked the Under Secretary of State for India whether he could give the birth- and death-rates for the province of Bengal for the 12 months ended to the last convenient date.—Earl WINTERTON replied: The latest figures available are for the calendar year 1926. The rates for births and deaths registered in the Bengal Presidency, excluding the Chillagong Hill tracts, were 27·44, 24·7 per *mille* respectively. As the result, however, of special inquiries instituted in connexion with the census reports it has been estimated that more than 26 per cent. of births and deaths in the province are unrecorded.

TUESDAY, APRIL 16TH.

Government and Radium Supplies.

Dr. VERNON DAVIES asked the Prime Minister whether he was now in a position to state what action the Government proposed to take on the Report of the Subcommittee of the Committee of Civil Research on Radium.—Mr. CHURCHILL (Chancellor of the Exchequer) replied: In view of the importance of the matter, and the public interest attracted by it, the Government arranged for the immediate publication of the Report. It will be seen that the Report deals with the national requirements for radium in medical treatment, in the fighting services, and for the purposes of physical research, and with the possibilities of developing new sources of supply. Further, in a full statement as to the use of radium in medical treatment, the subcommittee indicate that a great volume of avoidable distress and suffering persists simply because the radium required for the treatment of cancer is not available; and that the acquisition of further supplies should encourage the wider development of the highest skill in its use, and the allocation of more hospital beds to the treatment of suitable cases. The subcommittee express the opinion that in order to meet the requirements of England and Wales, and of Scotland, 20 grammes of radium, in addition to the stocks already available, or likely to be available shortly, for general medical use, should be acquired within a specified period—namely, before the end of 1930. The subcommittee recommend that the necessary sum, estimated at £200,000, should be raised by a public appeal to which the Government should contribute pound for pound within that maximum sum. The subcommittee also propose the setting up of an organisation consisting, first, of a body to hold the funds and purchase and hold the radium; and, secondly, of a body to distribute the radium and secure its full use in the manner best adapted to further the advancement of knowledge and the treatment of the sick. As regards the recommendations of the subcommittee on the subject of the organisation, these have been accepted in principle by the Government, but the precise form of the organisation will remain open to further discussion. The Government have accepted the financial recommendation of the subcommittee, and they will be prepared to contribute from public funds, up to a maximum of £100,000, to the extent of £1 for every £1 of private subscription for the purchase of additional radium. The Government confidently expect that there will be no difficulty in raising, in a very short space of time, the funds necessary to provide this invaluable addition to the national resources for dealing with one of the most formidable maladies known to us.

Mr. MACDONALD asked if the Government had considered the effect of this announcement on the price of radium, and if it proposed to take any steps to safeguard itself in that matter?

Mr. CHURCHILL: I understand that all that is dealt with in the Committee's report. The House is entitled to the Report, and therefore publicity is unavoidable, but I do not apprehend any serious evil consequences.

Commander BELLAIRS asked if the Report dealt with the international aspects of radium and made any recommendation to bring the matter before the League of Nations, especially with regard to the Belgian monopoly?

Mr. CHURCHILL said that he must frankly confess that, like Commander Bellairs, he was looking forward to studying the Report.

Lieut.-Commander KENWORTHY asked if the right hon. gentleman was aware that every time the Government had gone into the market to purchase radium the price had been raised against them, and if he would consider the suggestion of Commander Bellairs and advise the Foreign Office to examine into the matter of international action?

Mr. CHURCHILL said that he understood, though he did not speak with first-hand knowledge, that this matter was fully discussed in the report.

Replying to Dr. VERNON DAVIES, who asked if there would be an opportunity to discuss the report, Mr. CHURCHILL said that it did not seem to him that the House was going to have very much opportunity for discussing very much more.

Sir R. THOMAS asked if the report dealt with the potential supply of radium in Australia.

Mr. CHURCHILL: That is covered by the statement that I have not yet been able to study the Report.

Mr. R. MORRISON asked if it would not be necessary for the Government to have a supplementary estimate.

Mr. CHURCHILL replied that whatever was right and necessary would certainly be done.

Mr. W. THORNE asked what was the approximate cost of an ounce of radium.

Mr. CHURCHILL replied that he was sorry that he did not happen to have that information in his mind.

Mr. THORNE: Is the right hon. gentleman aware that the cost is about £400,000 per ounce?

Government and Slum Clearances.

Captain GARRO-JONES asked the Minister of Health when he intended to announce his promised plans for slum clearances.—Sir KINGSLEY WOOD replied: The Government hope to be able to lay proposals before the House next session.

Drug Smuggling at Welsh Ports.

Sir ROBERT THOMAS asked the Home Secretary whether he had any information indicating that drugs were being smuggled into this country on a large scale through the ports of Cardiff and Swansea.—Lieut.-Colonel Sir V. HENDERSON (Under Secretary to the Home Office) replied: The answer is in the negative.

Drugs from Russia.

Sir P. CUNLIFFE-LISTER (President of the Board of Trade), replying to Mr. DAY, stated that last year the declared value of drugs, medicines, &c., consigned from Russia to the United Kingdom was £294,977.

Medical News.

UNIVERSITY OF CAMBRIDGE.—At recent examinations the following candidates were successful:—

DIPLOMAS IN PUBLIC HEALTH, HYGIENE AND TROPICAL MEDICINE. *Part I.*—W. J. C. Auld, R. F. Campbell, G. L. Chadha, Katherine M. Douglas, Bessie G. Jenson, B. F. Lewin, A. P. Martin, R. M. Mathew, L. N. Mathur, Isabel D. Patterson, S. W. Savage, A. G. Shanks, and L. R. Sharma.

UNIVERSITY OF LONDON: *Forthcoming Lectures.*—Three lectures on the Drug-like Actions of Some Food Constituents will be given by Prof. E. Mellanby, F.R.S., at University College, Gower-street, W.C., at 5.15 P.M., on April 29th and 30th, and May 1st.—Prof. A. Brachet, of Brussels, will lecture on Experimental Embryology at University College, at 5.30 P.M., on Tuesday, May 28th, Wednesday, the 29th, and May 31st.—Two lectures on the Physiology of Glycogen will be delivered by Prof. J. J. R. Macleod, F.R.S., at the London Hospital Medical College, at 5.30 P.M., on Thursday, May 16th, and Friday, the 17th.—Two lectures on the Psychology of Dementia are to be given in English by Prof. E. D. Wiersma, of Groningen, at University College, at 5.30 P.M., on Wednesday, May 29th, and the following day.—Six lectures on Special Sense Physiology will be given by Mr. R. J. Lythgoe at University College, at 5 P.M., on Thursdays, May 2nd, 9th, 16th, 23rd, 30th, and June 6th.—Prof. S. J. Cowell will deliver six lectures on Dietetics at St. Thomas's Hospital, at 5 P.M., on Thursdays, May 2nd, 9th, 16th, 23rd, 30th, and June 6th.—Two lectures on Some of the Sequels of Epidemic Encephalitis (Lethargica) will be given by Prof. A. J. Hall at University College, at 4 P.M., on Fridays, May 3rd and 10th. Admission to all these lectures will be free, without ticket.

Applications for grants from the *William Smythe Hughes Medical Research Fund* must be received in proper form between May 1st and June 15th. Further particulars may be had from the Academic Registrar.

A University *Studentship in Physiology* of £100 a year will be awarded to a suitable candidate who applies on or before May 31st.

UNIVERSITY COLLEGE, LONDON.—The annual dinner of the Fellows will be held at the College on Tuesday, April 30th, at 7.15 for 7.30, in commemoration of the laying of the first stone of the College buildings by the Duke of Sussex on April 30th, 1827. Prof. F. W. Oliver, F.R.S., who was elected a Fellow in 1886, will preside.

The fund being raised in connexion with the centenary of the College has two main objects—to provide £200,000 for buildings and equipment, and £300,000 for endowment. Rather more than £212,000 has so far been received

UNIVERSITY OF LEEDS.—Three courses of post-graduate lectures will begin on May 1st. Dr. H. W. Davies will lecture on Acidosis, Alkalosis, and Ketosis, at the School of Medicine, Thoresby-place, Leeds, at 3 P.M. on Wednesdays; Mr. A. Richardson will lecture on Emergency Surgery at the General Infirmary on the same day at the same hour; and Prof. W. H. Maxwell Telling will lecture on Diseases of the Ductless Glands at the General Infirmary at 4.30 P.M. on Wednesdays.

A fortnight's general course of clinical instruction and lectures will be given at the General Infirmary and the School of Medicine from July 1st. Details may be had from the Dean of the School of Medicine.

UNIVERSITY OF DUBLIN.—The lecturer appointed for this year, Dr. Louis E. J. Werner, will deliver the Mary Louisa Prentice Montgomery Lecture in Ophthalmology in the School of Physic at 5 P.M. on Thursday, April 25th. His subject will be the Slit Lamp in Clinical Practice.—Arrangements have been completed for the holding of the usual three weeks' post-graduate course from Sept. 16th to Oct. 5th. As in former years, as far as possible practitioners attending the course will be able to live in college chambers.—A short course of lectures in anæsthetics will be given this term for medical students in their final year by Dr. T. P. C. Kirkpatrick, the University lecturer in anæsthetics. This course is intended to supplement the theoretical and practical instruction which is given at the clinical hospital.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—At a quarterly meeting of the Council held on April 11th, Lord Moynihan, President, in the chair, a vote of condolence on the death of Sir Anthony Bowlby, past President and past Member of the Council, was passed.—It was decided to expend Lord Beaverbrook's grant of £1000 upon tissue culture research.—The honorary gold medal of the College was awarded to Sir George Makins in appreciation of his valuable services to the College, more especially in arranging and describing the series of drawings in the Army Medical War Collection.—The Jacksonian prize for 1928 was not awarded, the essay received not being of sufficient merit to justify the award. The subject of the essay for 1930 is the Pathology of Ovarian Cysts and its Bearing on Their Treatment.

The following were elected to the Fellowship as Members of 20 years' standing, viz.: Mr. Comyns Berkeley, obstetric and gynæcological surgeon, Middlesex Hospital; and Prof. W. Blair Bell, obstetric and gynæcological surgeon, Liverpool Royal Infirmary.—The President reported that the vacancy on the Court of Examiners occasioned by the retirement of Sir Cuthbert Wallace, whose term of office has expired, would be filled up at the next meeting of the Council.—The Licence in Dental Surgery was conferred upon Max L. Cooper, Cape and Guy's, who has passed the requisite examinations and has complied with the by-laws of the College.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.—The Fellowship will hold its first course of instruction for the M.R.C.P. examination from May 7th to June 28th. This will consist of 16 lectures, each delivered at 8.30 P.M., at 11, Chandos-street, Cavendish-square, W. A detailed syllabus will be sent on application to the secretary of the Fellowship, at 1, Wimpole-street, W. 1. On April 29th a three weeks' course on diseases of the throat, nose and ear will start at the Central London Throat, Nose and Ear Hospital. Beginning on the same date is a month's course in psychological medicine at the Maudsley Hospital. From May 6th to June 1st there will be a course in venereal diseases at the London Lock Hospital, and from May 2nd to June 1st the London School of Dermatology will hold a special course of clinical instruction in the out-patient department, with formal lectures on fixed dates. From May 27th to June 8th an afternoon course, under the direction of Dr. Eric Pritchard, will be held at the Infants Hospital.

THE WORLD LEAGUE FOR SEXUAL REFORM.—The Third International Congress of the World League for Sexual Reform will be held in London, under the presidency of Dr. August Forel, Mr. Havelock Ellis, and Dr. Magnus Hirschfeld, from Sept. 9th to 13th next. The subjects for discussion are: (1) Marriage and divorce; (2) birth control, abortion, and sterilisation; (3) prevention of venereal disease and prostitution; (4) sex and censorship; while one day's proceedings will be devoted to papers on various subjects which do not come under these headings. The languages of the Congress will be English, French, German, and Esperanto. Those who wish to read papers are requested to notify at once Dr. Norman Haire, the hon. secretary, 127, Harley-street, London, W., and any communications for the sections must reach him not later than July 1st. Subscriptions to the Congress and donations for preliminary expenses will be gratefully received by the hon. treasurer, Mrs. Dora Russell, at Telegraph House, Harting, Petersfield, Hants.

TAVISTOCK-SQUARE CLINIC FOR FUNCTIONAL NERVOUS DISORDERS.—The annual general meeting will be held in the form of a luncheon at the Hotel Russell, Russell-square, London, W.C., on Monday, May 6th, at 1 o'clock, for 1.10 P.M. Sir Frederick Willis will preside; Dr. H. Crichton Miller, the honorary director, will present a report; and Sir Philip Gibbs will be among the other speakers. Supporters of the Clinic are invited to bring guests to the luncheon, tickets being obtainable from Miss Hollingsworth at the Clinic, 51, Tavistock-square, W.C.1.

KENSINGTON, FULHAM, AND CHELSEA GENERAL HOSPITAL.—A dinner will be held at the Mansion House, London, by permission of the Lord Mayor, on Tuesday, April 23rd, having for its object the raising of a fund for the rebuilding of this hospital. The Marquis of Carisbrooke will preside and Dame Madge Kendal will be amongst the speakers. The institution is in urgent need of rebuilding, while the shortage of beds and of accommodation for out-patient treatment is extreme in the neighbourhood. The estimated cost of the rebuilding is £70,000, of which £20,000 has been already subscribed.

ROYAL COLLEGE OF PHYSICIANS OF IRELAND.—At a meeting of the College on April 5th the following were elected Fellows: Nicholas Marshall Cummins, Robert Constable Cummins, and Robert Elsworth Steen.

Lord Dawson of Penn has promised to distribute the prizes and certificates to students of the London Hospital Medical College on Friday, June 28th.

NATIONAL ASSOCIATION FOR THE PREVENTION OF TUBERCULOSIS.—The fifteenth annual conference of this Association will be held from Oct. 10th to 12th at Newcastle-upon-Tyne. The Association's address is: 1, Gordon square, London, W.C.1.

ROYAL SANITARY INSTITUTE.—A sessional meeting will be held at 3 P.M. on Friday, April 26th, in the City Hall, Cardiff, when Dr. Ralph Picken and Dr. E. Colston Williams will open a discussion on the New Local Government Act. There will also be discussions on Town Planning and the Proposed Reconstruction of Cardiff Bridge.

MEDICO-LEGAL SOCIETY.—A meeting of this society will be held at 11, Chandos-street, Cavendish-square, W., at 8.30 P.M., on Thursday, April 25th, when Lord Riddell will read a paper on the Sterilisation of the Unfit. The Earl Russell, Dr. Nathan Raw, Dr. R. A. Gibbons, Dr. W. R. K. Watson, and Dr. T. B. Hyslop will take part in the subsequent discussion.

DR. JESSIE MACGREGOR MEMORIAL PRIZE.—An award of this prize, of the value of £75, will be made in July to the applicant who presents the best record of original work in the science of medicine. Such work must not have been published earlier than July, 1926. The prize is open to medical women who are medical graduates of the University of Edinburgh, or who have taken the Triple Qualification, and who before qualification have studied medicine for at least one year in Edinburgh. The successful applicant will later deliver a lecture on the subject of her work. Applications marked "Dr. Jessie Macgregor Prize in Medical Science" must reach the Convener of Trustees, Royal College of Physicians of Edinburgh, not later than May 31st.

HOSPITAL COÖPERATION.—The Special Committee of King Edward's Fund, which is considering the relations between voluntary hospitals and municipal hospitals under the new Local Government Act, is taking definite steps for the establishment of an organisation in the London area for consultation with the London County Council. The British Hospitals Association is arranging for the creation of similar organisations outside London.

CHARING CROSS HOSPITAL.—At the annual general court of the governors of this hospital last week it was claimed that it is "still the most economically run hospital in London." It is intended during the year to equip the adjoining premises purchased from the Westminster Ophthalmic Hospital, and the out-patient and casualty departments are being enlarged. It is also hoped hortly to rehouse the whole of the nursing staff, and to provide tennis courts, a garden, and private transport.

KING EDWARD'S HOSPITAL FUND FOR LONDON.—Mr. H. W. Marshall has given to King Edward's Hospital Fund £13,000 Japan 4 per cent. Bonds to be added to the "family fund" inaugurated by him in 1927. In 1927 Mr. Marshall, who had also given the Fund freehold property valued at £12,000, presented the Fund with £10,000 3½ per cent. Conversion Stock, and this was augmented last year by a legacy of £3711 from Miss Elizabeth Marshall, sister of the donor. The "Marshall Fund" is the first "family fund" to be created for the benefit of the King's Fund, and was inaugurated by Mr. Marshall in the hope that others might follow his example.

ROYAL WESTMINSTER OPHTHALMIC HOSPITAL.—This hospital will hold a festival dinner at the May Fair Hotel on Thursday, May 2nd, in celebration of its transference to the new premises in Broad-street, Holborn. The hospital is now in its 112th year and £50,000 is still required to meet the cost of the new building and its equipment, and the higher cost of maintenance. The number of in-patients is now equal to that of the old hospital, and there are also 14 private rooms for paying patients. Eventually the hospital will accommodate 100 persons requiring beds after operations. A new feature of the hospital is a ward for 12 children. Out-patients from the London area attend at the rate of 40,000 a year, and there are facilities for students of ophthalmology.

BRITISH HOSPITALS ASSOCIATION.—The Prince of Wales has accepted the invitation to become Patron of this Association. His Royal Highness explains that he has done so in the belief that he may encourage friendly coöperation between the Association and the King's Fund, of which he is President.

INFANT MORTALITY IN STRAITS SETTLEMENTS.—From an official report it appears that in Singapore infant mortality has dropped by one-half since 1911, an improvement mainly attributed to the strides which have been made in antimalarial measures.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MONDAY, April 22nd.—8 P.M., ODONTOLOGY. Casual Communications: Mr. G. Northcroft: The Migration of a Foreign Body. Mr. G. Thomson: Hyperplasia and Hypoplasia. Mr. E. A. Hardy: A Possible Pitfall in a Purely X Ray Diagnosis of a Fractured Mandible. Paper: Mr. Sheldon Friel: The Relation of Function to the Size and Form of the Jaws.

TUESDAY.—5 P.M., MEDICINE. Short papers: Dr. O. Leyton: How Can We Decide Whether a Case of Glycosuria Should be Treated? Dr. W. T. Munro: Pulmonary Tuberculosis Due to Bovine Tubercle Bacilli. Discussion will follow.

THURSDAY.—5.30 P.M., UROLOGY. Paper: Dr. P. J. Cammidge: Prostatectomy in Diabetics.

FRIDAY.—5 P.M. (Cases at 4.30 P.M.). DISEASE IN CHILDREN. 8 P.M., EPIDEMIOLOGY. Paper: Dr. J. Gordon Thomson: Endemic Malaria in Southern Rhodesia.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, London, W.

MONDAY, April 22nd, to SATURDAY, April 27th.—QUEEN MARY'S HOSPITAL, Stratford, E. Wed., at 2 P.M., Antenatal Demonstration by Mr. L. C. Rivett.—ST. JOHN'S HOSPITAL FOR DISEASES OF THE SKIN, Leicester-square, W.C. Thurs., at 2 P.M., O.P. Demonstration by Dr. W. K. Sibley. The above are free.—LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE, Endsleigh-gardens, W.C. Tues. and Thurs., at 2 P.M., Lecture-demonstration.—ROYAL FREE HOSPITAL, Gray's Inn-road, W.C. Wed., at 5.15 P.M., Lecture-demonstration.—ROYAL WATERLOO HOSPITAL, Waterloo-road, S.E. Special Course in Medicine, Surgery, and Gynæcology.—WEST END HOSPITAL FOR NERVOUS DISEASES, Welbeck-street, W. Daily, at 5 P.M., Lecture-demonstrations illustrated by cases. Further information from the Fellowship of Medicine.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

MONDAY, April 22nd.—2.30 to 5 P.M.: Medical, Surgical, and Gynæcological Clinics. Operations.

TUESDAY.—2.30 to 5 P.M.: Medical, Surgical, Throat, Nose and Ear Clinics. Operations.

WEDNESDAY.—2.30 to 5 P.M.: Medical, Skin, and Eye Clinics. Operations.

THURSDAY.—11.30 A.M.: Dental Clinics. 2.30 to 5 P.M.: Medical, Surgical, and Ear, Nose and Ear, Nose and Throat Clinics. Operations.

FRIDAY.—10.30 A.M.: Throat, Nose and Ear Clinics. 2.30 to 5 P.M., Surgical, Medical, and Children's Diseases Clinics. Operations.

ROYAL NORTHERN HOSPITAL, Holloway-road, N.

TUESDAY, April 23rd.—3.15 P.M., Dr. E. H. Shaw: Tumours.

ST. JOHN'S HOSPITAL DERMATOLOGICAL SOCIETY.

WEDNESDAY, April 24th.—4 P.M. (at St. John's Hospital, 49, Leicester-square, W.C.), Clinical Cases. 5 P.M., Dr. Roxburgh will open a discussion on Alopecia Areata.

CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL.

MONDAY, April 22nd.—1.30 P.M., Hearing Tests.

WEDNESDAY.—1.30 P.M., Examination of the Larynx.

FRIDAY.—1.30 P.M., Examination of the Mouth and Pharynx. 4 P.M., Mr. H. Kisch: Frontal Sinus Operations.

ROYAL DENTAL HOSPITAL POST-GRADUATE LECTURES.

WEDNESDAY, April 24th.—6 P.M., Prof. J. C. Drummond: Certain Biochemical Aspects of Saliva.

EUGENICS SOCIETY, at Burlington House, Piccadilly.

WEDNESDAY, April 24th.—5.15 P.M., Mr. C. J. Bond: Hæmolateral Asymmetry in Animals and Man, and its Relation to Cross-breeding.

CENTRAL ASSOCIATION FOR MENTAL WELFARE, at Central Hall, Westminster.

THURSDAY, April 25th, and FRIDAY, the 26th. Conference on Mental Welfare.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE COURSE.

TUESDAY, April 23rd.—4.15 P.M., Dr. A. H. Holmes: Minor Medical Operations.

FRIDAY.—4.15 P.M., Mr. W. R. Douglas: Demonstration of Surgical Cases.

ANCOATS HOSPITAL POST-GRADUATE LECTURES, Mill-street.

THURSDAY, April 25th.—4.15 P.M., Mr. E. E. Hughes: Modern Urological Methods.

Appointments.

LYTLE, W. J., F.R.C.S. Eng., has been appointed Assistant Surgeon to the Royal Infirmary, Sheffield.

SUMMERS, R. D., L.R.C.P. Lond., M.R.C.S., District Medical Officer for the London County Council, District 12.

Certifying Surgeons under the Factory and Workshop Acts: HARPER, C. G., L.R.C.P. Lond., M.R.C.S. (Market Deeping), and HARPER, F. G., M.D., Ch.B. Edin. (Somercotes).

Vacancies.

For further information refer to the advertisement columns.

Bath, Royal United Hospital.—H.P. Also Asst. H.S. At rate of £120 and £100 respectively.
Bedford County Hospital.—Asst. H.S. At rate of £130.
Bedfordshire Sanatorium, near Bedford.—Res. Asst. M.O. £450.
Birmingham, Ear and Throat Hospital.—3rd H.S. At rate of £150.
Birmingham General Hospital.—H.P. £70.
Birmingham and Midland Eye Hospital, Church-street.—Surgical Registrar.
Burnley, Victoria Hospital.—H.S. At rate of £125.
Bradford Royal Infirmary.—H.P. and 2 H.S.'s. Each £150. Also Hon. P.
Brighton, Royal Sussex County Hospital.—Three Hon. Med. Clin. Assts. Also Hon. Clin. Asst. to Dental Department.
Bristol Education Committee.—Asst. School M.O. £600.
Bristol Royal Infirmary.—Hon. Med. Reg. Also Hon. Reg. to Ear, Nose and Throat Dept.
Bristol University—Chair of Physiology.
Bury St. Edmund's, West Suffolk General Hospital.—H.S. £150.
Cancer Hospital, Fulham-road, S.W.—H.S. At rate of £100.
Cardiff Royal Infirmary.—Ophthalmic H.S. At rate of £75.
Central London Throat, Nose and Ear Hospital, Gray's Inn-road, W.C.—Second Res. H.S. £75.
Derby, Brethy Hall Orthopædic Hospital, near Burton-on-Trent.—Res. Med. Supt. £750.
Derby, Derbyshire Education Committee.—Asst. School M.O. £600.
Derby Guardians' Institution and Infirmary.—Second Res. M.O. £250.
Edinburgh Royal Infirmary.—Secretary and Treasurer. £900.
Elizabeth Garrett Anderson Hospital, Euston-road.—Jun. Asst. Obstetrician. Also Asst. Radiologist. £100.
Evelina Hospital for Children, Southwark, S.E.—H.S. At rate of £120. Also Hon. Phys. to Out-Patients.
Farringdon General Dispensary, Holborn-circus, E.C.—Physician.
Gravesend and North Kent Hospital.—Jun. H.S. £80–£200
Hackney Hospital, High-street, Homerton, E.—Jun. Asst. M.O. £350.
Halifax Royal Infirmary.—Third H.S. At rate of £100.
Harefield, Middlesex, County (Tuberculosis) Sanatorium.—Third Asst. Res. M.O. £400.
Hôpital Français, 172, Shaftesbury-avenue, W.C.—Jun. Res. M.O. £100.
Hospital of St. John and St. Elizabeth, 60, Grove End-road, N.W.—Res. H.P. At rate of £100.
Hove Hospital, Sackville-road.—Res. M.O. £150.
Hull Royal Infirmary.—Hon. Physician.
Inverness, Northern Infirmary.—Pathologist and Bacteriologist. £700.
Kingston-upon-Hull City and County of.—Asst. M.O.H. £600.
Liverpool Port Sanitary Authority.—Asst. Port M.O. £700.
Liverpool, Royal Liverpool Babies' Hospital, Woolton.—Res. M.O. At rate of £90. Also Locum.
Liverpool, Stanley Hospital.—H.P. At rate of £100.
London Hospital, Whitechapel, E.—Gynæcological First Asst. and Obstetric Tutor. £300.
London Female Lock Hospital, Harrow-road, W.—Hon. Obstet. Surg.
London Temperance Hospital, Hampstead-road, N.W.—Surg. Reg. 40 guineas.
Manchester Royal Infirmary.—First Asst. in Clinical Laboratory £350. Also Dickinson Research Travelling Scholarship in Medicine. £300. Also Pathology Scholarship. £75.
Manchester Victoria Memorial Jewish Hospital.—Hon. Gyn. Surgeon.
Miller General Hospital, Greenwich-road, S.E.—Out-patient Officer. At rate of £150.
New End Hospital, Hampstead, N.W.—Jun. Res. Asst. M.O. At rate of £200.
Norwich City Mental Hospital.—Jun. Asst. M.O. £500.
Plumstead and District Hospital, Plumstead High-street, S.E.—Third Asst. M.O. £300.
Queen Charlotte's Maternity Hospital, Marylebone-road, N.W.—Res. Anæsthetist. £80.
Queen's Hospital for Children, Hackney-road, E.—H.P. and Cas.O. Each at rate of £100. Also Surg. to Ear, Nose and Throat Dept.
Rhondda Urban District Council.—Asst. M.O.H., &c. £600.
Royal National Orthopædic Hospital, 234, Great Portland-street, W.—Surgical Registrar. At rate of £105.
St. Albans, Hertfordshire County Mental Hospital.—Pathologist. £525.
St. Bartholomew's Medical Coll ge.—Senior Curator of Museum.
St. Helens County Borough.—Asst. M.O.H. £450.
St. Mary's Hospital, Institute of Pathology and Research, Paddington, W.—Research Studentship. At rate of £200.
Samaritan Free Hospital for Women, Marylebone-road, N.W.—H.S. At rate of £100.
Sheffield, Nether Edge Hospital.—H.P. £150.
South Shields, Harton Poor-law Institution, &c.—Res. Asst. M.O. £300.
Sunderland, Royal Infirmary.—Hon. Physician.
Walsall General Hospital.—Jun. H.S. At rate of £100.
West Bromwich and District General Hospital.—Two Hon. Ophth. S.'s. Also Hon. Anæsthetists.
Wolverhampton and Midland Counties Eye Infirmary.—H.S. £200.
Wolverhampton, Royal Hospital.—Res. M.O. At rate of £150.
Woolwich and District War Memorial Hospital, Shooters' Hill, S.E.—H.S. At rate of £125.

The Chief Inspector of Factories announces vacancies for Certifying Factory Surgeons at Norwich (Norfolk); Kingsclere (Hants.); and at Rhayader (Radnorshire).

The Home Secretary gives notice of a vacancy for a Medical Referee under the Workmen's Compensation Act for the District of Barnsley County Court. Applications should reach the Private Secretary, Home Office, Whitehall, London, S.W. 1, not later than May 1st.

Births, Marriages, and Deaths.

BIRTHS.

BALLANCE.—On April 8th, at Westfield, Hatfield, the wife of Dr. Ballance, of a daughter.

MURRAY BLIGH.—On April 12th, at 74, Rodney-street, Liverpool, to the wife of John Murray Bligh, M.D. Liverp., M.R.C.P. Lond.—a son.

PRICE.—On April 11th, at the Maternity Home, Driffield, to Dorothy Price, M.B., B.Ch. (*née* Tait), the wife of V. R. Price, of Hornsea, Yorks, of a daughter.

PYE.—On April 10th, at a nursing home in Winchester, the wife of Dr. E. A. Pye, of a son.

MARRIAGES.

BUSH—VIZARD.—On April 13th, at All Saints' Church, Hove, Dr. Frank Parkinson Bush, of Chester-place, Norwich, to "Betty" (Florence), only daughter of Mrs. W. Vizard, of Denmark Villas, Hove.

SMELLIE—LAMSDALE.—On April 10th, 1929, at Sutton Coldfield Parish Church, James Maclure Smellie, M.D., M.R.C.P., to Kathleen, only daughter of Mr. and Mrs. H. Lamsdale, of Four Oaks, Sutton Coldfield.

DEATHS.

ADDINSELL.—On April 8th, at The Old Prebendal House, Shipton-under-Wychwood, Oxon., Lieut.-Colonel Augustus Whitehorn Addinsell, M.R.C.P., aged 71 years.

KIRKWOOD.—On April 13th, at Tymawr, Ravenslea-road, S.W., Thomas Kirkwood, M.A., M.B., C.M., D.P.H., in his 62nd year.

RUTHERFURD.—On April 14th, at Bute-gardens, Glasgow, W., Henry Rutherfurd, M.A., M.B., C.M., F.R.F.P.S. Glasg.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

THE LANCET: SUBSCRIPTION RATES.

INLAND	One Year	£2	2	0
	Six Months	1	1	0
	Three Months	0	10	6
ABROAD	One Year	2	10	0
	Six Months	1	5	0
	Three Months	0	12	6

Notes, Comments, and Abstracts.

RELIEF OF LOCAL RATES UNDER THE LOCAL GOVERNMENT ACT.

NINE Conservative Members of Parliament, who have made a special study of the ground covered by the new Local Government Act, have combined to expound its various aspects in a readable little book.[1] Mr. R. S. Hudson's chapter on "Poor Law" is a particularly good summary of the English system of poor relief from Elizabethan times. He cites effectively the list of inmates to be found in one poor-law institution last November—7 acutely sick persons, 9 uncertified mental deficients, 55 infirm and senile, 6 epileptics, 18 certified mental deficients, one able-bodied man, 8 certified lunatics, and 3 healthy infants. Mr. D. W. Gunston, in a chapter on "Rural Areas," makes the same point, and asks whether anyone would be anxious to enter such a place. London is specially dealt with by Sir Cyril Cobb, who describes the negotiations which preceded the agreement upon Mr. Chamberlain's final clauses. Mr. T. J. O'Connor attacks the rival policies of the Labour and Liberal parties, and Mr. Geoffrey Peto sums up at the finish. Though this little volume on "Rating Relief" is mainly concerned with the English legislation, room has fortunately been found for an excellent chapter on Scotland by Mr. C. M. Barclay-Harvey, which not only shows the differences between the two national systems of local government, but also prepares us for the corresponding Scottish Act which Parliament is expected to pass into law during the next few weeks. Both in England and Scotland the changes are so vast that any help towards understanding their general principles is welcome. "Rating Relief" is a sincere and competent contribution.

Sir Kingsley Wood has all the arguments at his fingers' ends, and has marshalled them lucidly and persuasively. His book [2] covers the whole plan of the Local Government Act in some 60 readable pages with an appendix of the figures (already published elsewhere), showing how the Act may be expected to affect the rates in areas in England and Wales. Within the brief limits set for it, "Relief for the Ratepayer" is the best book of its kind, valuable not only to the political advocate on the platform, but also to the army of voluntary administrators whose unselfish devotion to the public service will, as the Minister of Health says, now find new and wider scope for its activity.

A FATAL DRAUGHT OF MEDICINE.

A MAN, aged 39, living at Mayfield, in Sussex, developed a severe cold and sore-throat, and on April 2nd received a prescription from his medical adviser, Dr. G. A. Shackel, and had it made up by the local chemist. He took two or three doses, and about 1 P.M. on April 3rd he swallowed a whole dose in one mouthful, and died in a few minutes. The inquest was opened on April 5th, but the coroner, Dr. E. F. Hoare, adjourned the inquiry in order that the remaining contents of the bottle of medicine might be analysed. On April 9th he announced that the public analyst for East Sussex had written to say that there was nothing poisonous in the medicine which would have caused the patient's death. A nurse who had been called in to attend the patient said she did not know at that time that he had had a drink, or that he was choking. The symptoms, she said, resembled very much those of an epileptic fit, but she knew that he was not in a fit. The convulsions gradually became less, and she applied a mustard leaf without avail. The man did not speak, and died in a few moments. The chemist's assistant who made up the prescription said it was for a diaphoretic mixture containing nothing poisonous. The doses were of the usual strength and the bottle was properly labelled. The directions were further mentioned to the messenger who took the bottle away. Dr. Shackel said that in his opinion death was due to asphyxia caused by the man having choked himself. The heart was in a very weak state and that might have contributed to his sudden death. The man had no doubt choked himself by swallowing a dose of medicine too quickly so that it passed into the windpipe. The coroner said he would return a verdict in accordance with the medical evidence. The case, he added, was rather instructive; the whole point was that the man swallowed the medicine very quickly, and this kind of thing might happen to anyone at any time. He complimented the nurse on her conduct, remarking that no blame attached to anyone.

[1] Rating Relief. The Great Reform Act lucidly explained by a group of Conservative M.P.'s, with introduction by the Prime Minister. London: Philip Allan & Co., 1929. Pp. 183. 3s. 6d.

[2] Relief for the Ratepayer. A popular explanation of the Local Government Bill, 1929, by Sir Kingsley Wood, with an introduction by Mr. Neville Chamberlain and a Foreword by the Prime Minister. London: Ernest Benn, Ltd., 1929. 136 pp. 1s. 6d.

MEDIÆVAL WILLS.

To the Editor of THE LANCET.

SIR,—In the article on the above subject in THE LANCET for April 6th mention is made of the will of a barber-surgeon of Newcastle dated 1585. In the Surtees Society's publication, *Testamenta Eboracensia*, Vol. I., is the transcription of the will of a barber-surgeon of much earlier date—i.e., Oct. 29th, 1392. This is of considerable interest from the fact that it gives much information as to the furniture and belongings of a barber in the fourteenth century. Therein William de Dalton, who had received his freedom of the City of York as a barber in 1350, directs his body to be buried in the Priory Church of the Holy Trinity, Mykylgat (Micklegate) and bequeaths to the high altar certain linen, wax for candles, and "unam cistam ferro ligatam pro custodiendis ornamentis." Amongst other bequests he bequeaths to his executor Thomas de Garton the instruments of his occupation—viz., j pelvem rotundam parvam, j pecten de ebore, j brusche, j speculum, j cathedram cum sege, unum cochlear novum quod habet in suâ possessione, j razur habens manubrium de ebore."

To his servant Agnes Cuk, he leaves his matrass, and bolster with the bedlinen, his pestle and mortar and the wooden board which was presumably used for spreading ointments, together with the cooking utensils.

From the list of individual bequests it is clear that the testator was very comfortably off and that in his long life he had prospered. He died shortly after making his will, which was proved on March 24th, 1393.

It may be added that in the Church of Holy Trinity, Micklegate, is a mural tablet to Dr. John Burton, the man-midwife, who was the prototype of "Dr. Slop" in Lawrence Sterne's *Tristram Shandy*. A pair of midwifery forceps which belonged to him, and may have been that responsible for the shape of Tristram's nose, is still preserved in the York Medical Library.

I am, Sir, yours faithfully,

Birmingham, April 10th, 1929. G. A. AUDEN.

A FOOLISH MYSTIFICATION.

To the Editor of THE LANCET.

SIR,—The fact, alluded to in a note published recently in THE LANCET, that occasionally an old book gained in value from autograph notes presumably made by a previous owner, was well known to a person in the days when Holywell-street was lined on the south side with books of every description for sale at every price. For a short period a good many book-hunters picked up in Holywell-street for small sums books that were annotated, often with amusing erudition, the entries being made in pencil, and the references occurring in them being now and again to historic circumstances, or to known passages in the lives of public men; several learned bibliophiles, from the internal evidence, were led to believe that they had picked up books which had belonged to the famous dead and, I believe, printed their deductions. It turned out afterwards that the marginal notes were the ingenious labour of a practical joker. He made no profit, as he did not forge the name of any suggested former owner on the title page; thus no Holywell-street shopkeeper was deceived into giving him a high price for an otherwise worthless book—that would have been a difficult accomplishment. Hence the books remained cheap and apparently a prize for such bargain-hunters as made industrious investigations before parting with their pence. The trickster was simply enjoying himself by mystifying book collectors, which he was able to do until the frequency of these curious finds in the book-boxes of Holywell-street led to suspicion and revelation of the trick.

I was told this story, apropos the purchase in a book-box of some work alleged to be annotated by a historic doctor, and my informant professed to know who the silly ass was who was trying to mystify his brother collectors.

Of course, some of these books may have since received value from an acceptance of the forgeries.

I am, Sir, yours faithfully,

April 12th, 1929. M.D.

NEW PREPARATIONS.

Albichthon Ointment.—We have received from the Ichthyol Co., Ltd., 18, Adam-street, Adelphi, London, W.C., a sample of a new preparation of colourless sulphur having the same characteristics as other ichthyol preparations in accordance with its chemical composition, and pharmacological tests justify this view. It contains a little over 12 per cent. of sulphur and is supplied in collapsible tubes of three strengths. Ichthyol, prepared from schist oil obtained from the bituminous shale workings of Seefeld in the Tyrol, has only a slightly lower sulphur content than that of Albichthon, which therefore might be expected to be efficacious in chronic skin diseases such as eczema, psoriasis, and acne, where ichthyol is of a well-tried value that does not require to be insisted upon. The remedy is made up in a convenient way for use.